

Order Inion

2920

Premaxillaries well developed, excluding maxillaries from edge of upper jaw. Opercular apparatus sometimes incomplete. Gill openings wide. Gills 4, slit after fourth. Pharyngeal bones unmodified. Air bladder small or absent, with duct when present. Ovaries with oviducts. Skeleton mostly weakly ossified. Front vertebrae simple, unmodified, without auditory

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ossicles, vertebral centra  
crossified with arches.

Mesocoracoid arch usually  
absent or atrophied. Shoulder  
girdle with posttemporal not  
normally united with skull,  
though touching same at or near  
nape. Scales mostly cycloid,  
often absent. Photophores  
usually present. Dorsal and  
anal fins without true spines.  
Ventrals, when present, abdominal.  
Adipose fin variously present or



absent.

Marine fishes, mostly bathypelagic. Though allied with the herring and salmon like groups they differ in the absence of the mesocoracoid bone and the connection of the shoulder girdle with the skull imperfect. Following Parr's contention the Cetunculi are here omitted and ranged with the Xenoberyces.

Depth  $6\frac{4}{5}$  to vent; head  $2\frac{3}{5}$ , width  $3\frac{1}{8}$ . Snout  $2\frac{1}{3}$  in head; eye  $1\frac{1}{4}$ ,  $3\frac{7}{8}$  in snout,  $1\frac{2}{5}$  in interorbital; maxillary reaches eye, length from snout tip  $2\frac{1}{3}$  in head; interorbital 7, low.

Scales 18? enlarged to vent. On figure only 9 shown between ventral and anal. Scales nearly all lost.

D. II, 9, first branched ray  $2\frac{1}{5}$  in head, origin slightly behind first third between ventral and anal origins; third branched anal

2923

## Analysis of Families

a. Myctophoidea. Mouth not or but little protractile; interopercle not reduced; clavicle attached to supracleavicle at lower end of latter.

b. No photophores.

c. Teeth in jaws in bands of several series.

d.<sup>1</sup> Dorsal postmedian; rays of some fins filamentous. Eulopidae.

d.<sup>2</sup> Dorsal premedian; rays of fins without filaments. Synodontidae.

e.<sup>1</sup> Teeth uniserial or in very narrow bands in jaws; some lower or palatine teeth may be fang like. Sudidae.

b.<sup>2</sup> Photophores present, rarely or only occasionally absent. Myctophidae.



# Analysis of the

a.<sup>2</sup> Alepidosauroidae. Mouth not protractile; dentition strong; interopercle reduced; clavicle attached to supraclavicle at or near upper end of latter, which extends downward and backward and has upper postclavicle attached to its terminal end.

e. Eyes not telescopic.

f. Eye normal, without orbital cavity expanded downward.

g. Dorsal moderate, postmedian; ventral opposite dorsal; size small. Amorudidae.

g.<sup>2</sup> Dorsal very large, high, occupies most of back; ventral nearer pectoral than anal; size large. Alepidosauridae.

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f. <sup>2</sup> Eye with orbital cavity  
expanded downward; ~~teeth~~ large,  
~~some fang like.~~ Evermannellidae.

<sup>mostly</sup>  
e. <sup>2</sup> Eyes, telescopic, lateral,  
directed upward. Scopelarchidae.



ray  $3\frac{4}{5}$ ; pectoral  $2\frac{1}{5}$ , rays 8;  
ventral  $2\frac{3}{4}$ , rays 8.

Rather light colored. Deep  
black of buccal and branchial  
cavities shines through their  
integuments. Hind part of anal  
black. Length 445 mm. (Günther.)

Indian Ocean, China Sea.

2726

## Family Aulopidae

Body moderately to slenderly elongate, little compressed or subcylindrical. Eyes lateral. Mouth slightly protractile, terminal, rather wide. Maxillary long, reaches hind eye edge or beyond. Vomerine teeth forms single transverse series. Branchiostegals long, curved, numerous. No air vessel. Vertebrae 52. Scales moderate or small. Sometimes rows of luminous spots or photophores along belly. Dorsal premedian or median. Anal postmedian. Pectoral rather low. Ventrals widely separated, rays 9, inserted below or little behind pectorals.

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~~Lutjanus~~ griseoides (Guichenot)

Mesoprion griseoides Guichenot, Notes Ile  
Réunion, vol. 2, 1862, p. 2 (23), Réunion.  
Lutjanus griseoides Sauvage, Hist Nat.  
Madagascar, Poiss., 1891, p. 92, pl. 9, fig. 3,  
a-b (type; Madagascar).



Although Regan has placed the Atelepoidea as a suborder of the Inioi, chiefly on certain osteological resemblances with Aulopus, especially its shoulder girdle, it does not appear to me closely related. Its peculiar physiognomy, even if only superficial, certainly recalls the jugular ventrals of the brotulids, macrurids, or such groups. Macristium, which Regan also places as probably related to Aulopus is arranged with the clupeoids near the Alepocephalidae by Jordan.

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Analysis of genera

a.<sup>1</sup> Body moderately long; no photophores;  
dorsal premedian. Aulopus.

a.<sup>2</sup> Body very slender and elongate;  
3 ventral rows of photophores each  
side; dorsal median. Scopelosaurus.

Genus Aulopus Cloquet

2930

Aulopus (Cuvier) Cloquet, Dict. Sci.  
Nat. Paris, ed. 2, vol. 3, Suppl.,  
Oct. 1816, p. 128. Type Salmo  
filamentosus Bloch, monotypic. —  
Cuvier, Règne Animal, ed. 1, vol. 2, 1817  
(Dec. 1816), p. 170. Type Salmo  
filamentosus Bloch.

Hime Starks, Copeia, no. 127, March  
29, 1924, p. 30. Type Aulopus  
japonicus Günther, orthotypic.

Body rather elongate, slightly compressed.  
Head large. Muzzle rather short.  
Eye moderate, large. Mouth cleft  
wide. Maxillary extends below hind  
part of eye or beyond, dilated behind  
and with 2 supplemental maxillary.  
Teeth small, conic, in narrow bands.



Genus Aulopus Cuvier

Aulopus Cuvier, Règne Animal, vol. 2,  
1817, p. . Type Salmo filamentosus

Block, monotypic.

in jaws, on vomer, palatines, pterygoids  
and tongue. Gill opening very wide.  
Pseudobranchiae well developed.

Branchiostegals 10 to 16. Pyloric appendages  
5 or 6. Orbitosphenoids well developed  
or no ossification in front of interorbital  
region (Hime). Scales large. Lateral  
line complete, axial. Dorsal advanced  
or inserted nearly opposite ventral,  
often with long pointed lobe in male.  
Adipose fin small. Anal moderate.  
Caudal forked. Pectoral rather  
long.

## Analysis of species

a. 'Aulopus. Gill rakers 6 to 8 + 12 to 14;  
scales 50 to 52 in lateral line to caudal  
base and 3 more on latter.

b. Dorsal II, 12 to 14; Anal II, 9.  
filamentosus.

b.<sup>2</sup> Dorsal II, 20; Anal I, 12. purpurissatus.

a.<sup>2</sup> Hime. Gill rakers 8 to 9 + 14 to 16;  
scales 42 or 43 in lateral line to  
caudal base; Dorsal I, 15; Anal II, 8.  
japonicus.



Aulopus filamentosus (Bloch)

Salmo filamentosus Bloch, Schrift.  
Ges. Naturforsch. Freund. Berlin,  
vol. 10, 1791, p. 424, pl. 9, fig. 2. Livorno,  
Italy.

Aulopus filamentosus Bonaparte, Iconogr.  
Swainson, Nat. Hist. Animals, vol. 2, 1839,  
p. 288 (Sicily).

Fesc. Europ., 1846, p. 36 (Mediterranean).

— Valenciennes, Hist. Nat. Poiss., vol. 22,  
1849, p. 513 (Ile, Messina, Morée, Canaries).

— Günther, Cat. Fishes Brit. Mus., vol. 5,  
1864, p. 402 (Mediterranean; Madeira). —

Canestrini, Fauna Italica, Pesci, 1874, p.  
122 (Ile, Southern Italy; Naples, Sicily).

Aulopus filamentosus (Bloch)

Salmo filamentosus Bloch, Schrift.  
Ges. Naturforsch. Freund. Berlin,  
vol. 10, 1791, p. 424, pl. 9, fig. 2. Livorno,  
Italy.

Aulopus filamentosus Bonaparte, Iconogr.

Fauna Italica, Pesci 3, pt. 1, fasc. 28,  
1840, pl., figs. 1a-b (Italy); Cat. Met.

Pesc. Europ., 1846, p. 36 (Mediterranean).

— Valenciennes, Hist. Nat. Poiss., vol. 22,  
1849, p. 513 (Nice, Messina, Morée, Canaries).

— Günther, Cat. Fishes Brit. Mus., vol. 5,  
1864, p. 402 (Mediterranean; Madeira). —

Canestrini, Fauna Italica, Pesci, 1874, p.

122 (Nice, Southern Italy; Naples, Sicily).

— Moreau, Manuel Ichth. France, 1892,  
 p. 561 (Mediterranean, Cette, Nice). —  
Griffini, Man. Ittiol. Italiana, 1903,  
 p. 267, fig. 145. — Fowler, Proc. Acad. Nat.  
 Sci. Philadelphia, 1911 (1912), p. 563  
 (Italy), 1923, p. 33 (Praia Formosa,  
 Madeira).

Autopus filamentosus Steindachner, Sitzs.  
 Ber. Akad. Wiss. Wien, Math.-naturw.  
 Klasse, vol. 57, pt. 1, 1868, p. 730 (Teneriffe;  
 error).



2935

*Plant.* Salmo trus Rafinesque, Carr. nov.  
Animal. Sicilicis, 1810, p. 56. Sicily.  
Asmerus saurus (not Linnaeus) Risso,  
Ichth. Nice, 1810, p. 325. Nice.

Saurus lacerta Risso, Hist. nat. Eur.  
Mér. id., vol. 3, 1826, p. 463. Nice. —  
Lowe, Trans. Zool. Soc. London, vol. 2,  
1837 (1841), p. 188 (Madeira); Proc.  
Zool. Soc. London, vol. 11, 1843, p. 88  
(Madeira).

Aulopus filifer Valenciennes, Hist. nat.  
Canaries, Poiss., vol. 2, pt. 2, 1836-44, p.  
73, pl. 15, fig. 2. Canary Islands. —

Steindachner, Sitzb. Ber. Akad. Wiss.  
Wien, math.-naturw. Klasse, vol. 51, pt. 1,  
1865, p. 403 (Santa Cruz, Teneriffe).

Aulopus maculatus Valenciennes,  
 Hist. nat. Canaries, Poiss., vol. 2, pt.  
 2, 1836-44, p. 74, pl. 15, fig. 3. Canary  
 Islands. — Steindachner, Sitzb. Ber.  
 Akad. Wiss. Wien, math.-naturw. Klasse,  
 vol. 51, pt. 1, 1865, p. 403 (Santa Cruz,  
 Teneriffe).

Depth 5 to  $7\frac{4}{5}$ ; head 3 to  $3\frac{1}{2}$ ,  
 width  $1\frac{9}{10}$  to 2. Snout  $3\frac{1}{3}$  to  $3\frac{2}{3}$  in  
 head from snout tip; eye  $3\frac{7}{8}$  to  $4\frac{2}{5}$ ,  
~~subequal with~~  
~~to 1~~ in snout, greater than interorbital;  
 premaxillary not quite reaching opposite  
 hind eye edge, length  $1\frac{7}{8}$  to 2 in head  
 from snout tip; interorbital 5 to 6,

slightly concave. Gill rakers 7 or 8 + 13 or 14, of which 5 above and 3 below rudiments; others firm, rather slender; gill filaments  $2\frac{1}{2}$  in interorbital.

Scales 50 to 52 in lateral line to caudal base and 3 more on latter; 5 above, 5 below, 15 predorsal, 3 rows on cheek. Caudal scaly basally.

D. II, 12, I to II, 14, I, second simple ray  $1\frac{3}{4}$  to  $1\frac{4}{5}$  in total head length; adipose fin to ; A. II, 9, I, second simple ray  $3\frac{1}{4}$  to  $3\frac{2}{5}$ ; caudal forked; least depth of caudal peduncle 5 to  $5\frac{1}{5}$ ; pectoral  $1\frac{7}{8}$  to 2; ventral



$1\frac{1}{2}$  to  $1\frac{3}{5}$ .

Dull or pale brown, little paler below. Dorsal dusky terminally. Fins all pale.

Mediterranean, Canaries, Madeira. Several of specimens are males and show longer dorsal rays anteriorly, though none prolonged so much as represented in Bonaparte's figure.

to A.N.S.P. Italy. C.L. Bonaparte.  
Dr. T.B. Wilson. Length

to 327 mm.

A.N.S.P. Italy. C.L. Bonaparte  
No. 20. Dr. T.B. Wilson. Length mm.  
Dried skin.

A.N.S.P. Italy. C.L. Bonaparte  
No. 23. Dr. T.B. Wilson. Length mm.  
Dried skin.

Aulopus purpurissatus Richardson

Aulopus purpurissatus Richardson, Icones  
Piscium, 1843, p. 6, pl. 2, fig. 3. Houtman  
Abrothos (Emery). — Macleay, Proc. Linn. Soc.  
New South Wales, vol. 6, 1881, p. 221 (Port  
Jackson; Melbourne). — McCoy, Programma Zool.  
Victoria, dec. 6, 1881, pls. 54-55. — Lucas, Proc.  
Royal Soc. Victoria, series 2, 1890, p. 35 (reference).  
— Ogilby, Edible Fishes New South Wales, 1893,  
p. 166, pl. 40. — Waite, Mem. Australian Mus.,  
vol. 4, 1899, p. 54 (New South Wales, 23 to 68  
fathoms); Records Australian Mus., vol. 6,  
pt. 2, 1905, p. 59 (Mandurah). — Stead, Edible  
Fishes New South Wales, 1908, p. 33, pl. 11. —  
Ogilby, Proc. Royal Soc. Queensland, vol. 21, 1908,



p. (off Moreton Bay, Laguna Bay, Townsville,  
Mount Tempest, Queensland). — McCulloch,

Zool. Res. Endeavour, vol. 1, pt. 1, Dec. 22, 1911,

p. 22 (off Cape Wiles, South Australia, 75 fathoms).  
— Roughley, Fishes of Australia, 1916, p. 25, pl. 3 (New South Wales, Victoria, <sup>Australia</sup> West).  
— White, Records South Australian Mus., vol.

2, no. 1, 1921, p. 44, fig. 64. — McCulloch, Fishes  
New South Wales, ed. 2, 1927, p. 20, pl. 6, fig. 64a.

Aulopus purpurisatus Klunzinger, Archiv-  
Naturges., vol. 38, pt. 1, 1872, p. 42 (Murray River).

Aulopus milesii Valenciennes, Hist. Nat. Poiss.,  
vol. 22, 1849, p. 385. "New Holland" (Miles) [=

Sydney, J.

2942

Depth  $4\frac{3}{5}$ ; head  $3\frac{1}{4}$ , width  
2. Snout  $3\frac{1}{8}$  in head from snout  
tip; eye  $5\frac{1}{5}$ ,  $1\frac{3}{5}$  in snout,  $1\frac{1}{4}$   
in interorbital, <sup>pre.</sup>maxillary reaches  
opposite hind eye edge, expansion  
 $1\frac{1}{3}$  in eye, length 2 in head from  
snout tip; interorbital  $4\frac{1}{5}$ , low,  
deeply concave. Gill rakers 6 + 13,  
of which 3 or 4 above and below  
rudiments, others lanceolate,  
subequal with gill filaments or  
 $1\frac{3}{4}$  in head.

Scales 50 in lateral line to  
caudal base; 6 above; 6 below,  
14 predorsal, 4 rows on cheek.

Caudal largely covered with fine scales. Scales with 145 fine basal circles, not extended apically; 40 strong triangular apical points.

D.  $\overline{\text{I}}$ , 20, first branched ray  $1\frac{5}{6}$  in <sup>total</sup> head length; adipose fin  $6\frac{3}{4}$ ; A.  $\overline{\text{I}}$ , 12,  $\overline{\text{I}}$ , first branched ray 3; least depth of caudal peduncle  $4\frac{1}{2}$ ; caudal  $1\frac{1}{2}$ , well forked, lobes pointed; pectoral  $1\frac{2}{3}$ ; ventral  $1\frac{1}{8}$ .

Back dark amber brown, obscurely mottled with darker. Under surfaces of head and body paler brownish, with more



or less soiled appearance'. Iris  
pale brownish. Fins all brownish,  
all with very obscure darker  
transverse spots on rays of dorsal,  
form more or less as cross bands  
on other fins'.

47802. U.S.N.M. Port Jackson.  
Australian Museum. Length.  
310 mm.

Aulopus japonicus Günther

Aulopus japonicus Günther, Rep. Voy.

Challenger, vol. 1, pt. 6, 1880, p. 72. Market  
of Yokohama. — Franz, Abhandl. Kön.  
Bayer. Akad. Wiss., vol. 4, Suppl. Band  
1, 1910, p. 21 (Yokohama and Sagami Bays).

2946  
Depth  $4\frac{2}{5}$  to  $4\frac{3}{4}$ ; head  $2\frac{9}{10}$  to  $3\frac{1}{3}$ , width  $1\frac{7}{8}$  to 2, snout  $3\frac{3}{5}$  to  $3\frac{4}{5}$  in head from snout tip; eye <sup>in young to subequal in male,</sup>  $3\frac{1}{5}$  to  $3\frac{3}{4}$ , greater than snout, <sup>greater</sup> ~~greater~~ than bony <sup>than</sup> ~~than~~, interorbital ~~in young to subequal~~ <sup>pre</sup> maxillary reaches ~~back~~  $\frac{1}{2}$  to  $\frac{3}{5}$  in eye, expansion  $1\frac{4}{5}$  to 2 in eye, length 2 to  $2\frac{1}{5}$  in head from snout tip; interorbital  $4\frac{1}{4}$  to 5, low, concave. Gill rakers <sup>or 14 to</sup>  $8 + 16$ , lanceolate, equal gill filaments or  $2\frac{1}{3}$  in eye.

Scales 42 or 43 in lateral line to caudal base; 5 above, 4 below, 10 or 11 predorsal, 3 rows on cheek. Caudal largely covered with fine scales.



Scales with 89 or 90 basal radiating  
~~sub~~ circuli, not extended apically;  
 46 rather strong triangular apical  
 points.

D. I, 15, I, second branched ray  
<sup>first branched ray in male long as head</sup>  
 $1\frac{3}{5}$  to  $1\frac{3}{4}$  in total head length;  
 adipose fin 6 to  $7\frac{1}{2}$ ; A. II, 8, I,  
 first branched ray  $2\frac{2}{5}$  to  $3\frac{7}{8}$ ; caudal  
 $1\frac{2}{5}$  to  $1\frac{3}{4}$ , widely expanded or  
 but slightly notched; least depth  
 of caudal peduncle  $4\frac{1}{5}$  to  $4\frac{2}{5}$ ;  
 pectoral  $1\frac{2}{5}$  to  $1\frac{1}{2}$ ; ventral 1 to  
 $1\frac{1}{3}$ .

Brownish above, paler to  
 whitish below. Three large dark

saddle like blotches on back,  
each saddle made up of variable  
or obscure 'darker' borders;  
first saddle at front of dorsal,  
second at hind part of dorsal  
usually some scattered brown spots in pale intervals  
and third at adipose fin; Iris  
silvery white with some gray tints.  
Fins all pale brownish.

10069. D. 5279. Malavatum Island  
(W.), S.  $18^{\circ}$  W., 5.40 miles (N.  $13^{\circ} 57' 30''$   
E.  $120^{\circ} 22' 15''$ ), China Sea, vicinity Southern  
Luzon. In 117 fathoms. July 17, 1908.  
Length 243 mm. Male.

51422 U.S.N.M.

Suruga Bay, Japan. Albatross

Station 3708.

Length 212 mm.

51439 U.S.N.M.

Suruga Bay, Japan. Albatross

Station 3730.

Length 117 mm.

57561 U.S.N.M.

Yokohama, Japan.

P.L. Jay.

Length 185 mm.



Genus Scopelosaurus Bleeker  
Scopelosaurus Bleeker, Act. Soc. Sci.  
 Ind. Néerl.<sup>and</sup> (Amboina), vol. 8, 1860, p.

12. Type Scopelosaurus hoedti Bleeker,  
 monotypic.

Body elongate, cylindrical, slender,  
 depth III of more. Head small.  
 Snout long, pointed. Eye large, anterior.  
 Mouth large, bordered above by  
 premaxillaries, long maxillary above.  
 Teeth fixed, small, uniserial in  
 premaxillaries, on palatines and vomer,  
 several series in mandible, none on  
 tongue. Opercular bones reduced. Gill  
 rakers rather long and slender. Gills 4.  
 Pseudobranchiae present. Branchiostegals  
 9. Scales cycloid, small, absent from  
 head. Lateral line straight, with over  
 60 scales, formed of tubules. Three  
 ventral series of photophores between  
 isthmus and anal. Dorsal origin little  
 nearer caudal base than snout tip,  
 higher than base length or slightly

higher than body. Adipose fin  
slender, oblong, pointed, opposite  
last anal rays. Anal subequal  
with postocular, longer than high,  
emarginate. Caudal forked. Pectoral  
median, lateral, pointed. Ventral  
much shorter than pectoral, nearer  
head than anal.

Scopelosaurus hoedti Bleeker

Scopelosaurus hoedti Bleeker, Act. Soc.  
Sci. Ind. Néerl. (Amboina), vol. 8, 1860,  
p. 13. Amboina. — Günther, Cat. Fishes  
Brit. Mus., vol. 5, 1864, p. 417 (copied).  
— Bleeker, Atlas Ichth. Ind. Néerland.,  
vol. 6, 1856-1872, p. 157, pl. (2) 278, fig.  
4 (type). — Weber and Beaufort, Fishes  
Indo Austral. Archipelago, vol. 2, 1913,  
p. 176, fig. 68 (type).



2954

Family Synodontidae

Body oblong or elongate, little compressed. Head moderate, pointed. Mouth very wide, entire upper margin formed by long slender premaxillaries, closely adherent with slender maxillaries, latter mostly rudimentary or obsolete and never expanded posteriorly. Teeth mostly cardiform in both jaws, on palatines and tongue. Canines rarely present and larger teeth usually depressible. No barbels. Opercle thin, complete. Gill membranes separate, free from isthmus, Gill rakers tubercular, or obsolete. Pseudobranchiae present. Branchiostegals usually numerous. Body covered with cycloid scales,

Lutjanus rungei Bleeker, Atlas Ichth.  
Ned. Néerl., vol. 7, 1873-76, pl. (21) 299,  
fig. 3; vol. 8, 1876-77, p. 65 (Pinang,  
Singapore, Java, Bali, Sumbawa).

Mesoprion taeniops Valenciennes, Hist.  
Nat. Poiss., vol. 6, 1830, p. 573. Fresh  
waters of Celebes.

Mesoprion yapilli (not Valenciennes)  
Richardson, Annals Mag. Nat. Hist. London,  
vol. 9, 1842, p. 26. Port Essington.

Mesoprion yapillii  
Snyder, Fishes of India, pt. 1, 1875, p. 45, pl.  
13, fig. 6 (Madras).

Mesoprion immaculatus (not Valenciennes)

Bleeker, Verhandl. Batav. Genootsch.  
(Piscid.), vol. 22, 1849, p. 45 (Batavia).

? Mesoprion maui Thiollière, Nouv. Woodlark,  
1857, p. 147. Woodlark Island.



rarely naked. Lateral line present, axial. Skeleton rather well ossified. Air vessel small or wanting. Intestinal canal short. Eggs inclosed in sacs of ovary and extruded through oviduct. Dorsal fin short, of soft rays only. Adipose fin present, rarely obsolete. Anal moderate or long. Caudal forked. Paired fins present.

Mostly shore fishes, some living at great depths and <sup>most are</sup> not valued as food.



Analysis of genera

2956

a. Scales present, more or less adherent.

b. Synodontinae. Premaxillary teeth simple, compressed, not barbed, in 1 or 2 rows; broad band of similar teeth on palate; mouth gape wide; flesh firm.

c. Palatine teeth single band each side of palate.

d. Snout very short, shorter than eye; anal longer than dorsal.

Trachinocephalus.

d.<sup>2</sup> Snout rather acute, longer than eye.

e. Anal much longer than dorsal; no lateral line. Xystodus.

e.<sup>2</sup> Anal much shorter than dorsal; lateral line present. Synodus.

c.<sup>2</sup> Palatine teeth in 2 bands each side of palate; snout rather acute; anal

2957

shorter than dorsal. Saurida.

b.<sup>2</sup> Harpadontinae. Lower teeth of lower jaw barbed; longer teeth more or less depressible; anal moderate; flesh very soft. Harpadon.

b.<sup>3</sup> Bathysaurinae. Premaxillary teeth in very broad band, curved, unequal, barbed at end; similar band on palatines; flesh delicate. Bathysaurus.

a.<sup>2</sup> Bathylacinae. Scales very caducous or absent; teeth in narrow bands; vent postmedian. Bathylaco.

2958

Genus Trachinocephalus Gill

Trachinocephalus Gill, Proc. Acad. Nat. Sci. Philadelphia, Cat. East Coast Fishes, 1861, p. 53. Type Salmo myops Schneider, monotypic.

Goodella Gilby, Proc. Linn. Soc. New South Wales, vol. 22, 1897, p. 249. Type Goodella hypozona Gilby, monotypic.

Laurida Swainson, Nat. Hist. Animals, vol. 2, 1839, p. 287. Type Salmo foetens (not Linnaeus) Bloch = Salmo myops Schneider, designated by Swain, Proc. Acad. Nat. Sci. Philadelphia, 1882, p. 279.



Body elongate, compressed, robust.  
Head deep, laterally compressed.  
Snout very blunt, shorter than eye.  
Lower jaw protrudes. Teeth simple,  
slender, small, close set. Single  
band of teeth on each palatine.  
Branchiostegals 16. Scales moderate,  
55 to 58. Anal longer than dorsal.  
Vent premedian, below tip of  
last dorsal ray.

Trachinocephalus myops (Schneider)

— Valenciennes, Hist. nat. Poiss., vol. 22, 1849, p. 485 (South Carolina, Martinique, Bahia, Brazil, Saint Helena, Mauritius, Pondicherry, Trinquemale, Macao, Celebes, Amboina).

1827, p. 268 (copied). — Cantor, Journ. Asiatic

Soc. Bengal, vol. 18, pt. 2, 1849, p. 1423 (Pinang).

— Bleeker, Verhandel. Batavia. Genootsch. (Japan), vol. 26, 1851, p. 6 (Nagasaki); Act. Soc. Sci. Ind.

Néerland., no. 3, vol. 3, 1857-58, p. 6 (Japan). —

Quichenot, Notes Ile Réunion, vol. 2, 1862, p. 29. —

Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 378

(Cuba, Jamaica, Japan, Amboina, Pinang, Mauritius,

Port Jackson). — Bleeker, Verslag Kon. Akad.

Wet. Amsterdam, series 2, vol. 2, 1868, p. 306

(Aru Islands). — Schmeltz, Cat. Mus. Godeffroy,

no. 4, 1869, p. 24 (Viti Islands). — Day, Fishes of

Trachinocephalus myops (Schneider)  
Salmo myops Schneider, Syst. Ichth. Bloch,  
1801, p. 421. Vt. Helena. (An Forster.)

Xanopus myops Cuvier, Règne Animal, ed. 2, vol. 2,  
1827, p. 268 (copied). — Cantor, Journ. Asiatic  
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Cuba, vol. 2, 1860, p. 385. Cuba.

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Depth  $5\frac{1}{4}$  to  $5\frac{1}{2}$ ; head  $3\frac{2}{5}$  to  $5\frac{1}{2}$ , width  $1\frac{7}{8}$  to 2. Snout  $6\frac{1}{2}$  to  $6\frac{3}{4}$  in head; eye  $6\frac{1}{4}$  to  $7\frac{4}{5}$ ,  $1\frac{1}{4}$  in snout,  $1\frac{1}{3}$  in interorbital; adipose lids narrow, marginal; premaxillary extends 1 to  $2\frac{1}{4}$  eye diameters behind eye, length  $1\frac{3}{4}$  to  $1\frac{7}{8}$  in head; interorbital 6 to  $7\frac{1}{4}$ , concave. Gill rakers clusters of minute numerous spinules, much less than gill filaments, which  $1\frac{3}{4}$  in eye.

Scales 51 to 54 in lateral line to caudal base and 4 or 5 more on

latter; 3 or 4 above, 6 or 7 below,  
16 or 17 predorsal; 5 rows on  
postocular to hind preopercle ridge,  
2 rows on opercle above. Ventral  
axillary scale  $3\frac{1}{2}$  in fin. Scales  
with 3 to 5 basal radiating striae,  
edge scalloped; circuli very fine,  
not extended apically.

D. II, 11, I or II, 12, I, first branched  
ray  $1\frac{2}{5}$  to  $1\frac{4}{5}$  in head; adipose  
fin  $6\frac{7}{8}$  to 7; A. 15, I, last ray  
 $3\frac{1}{5}$  to  $3\frac{2}{3}$ ; caudal  $1\frac{4}{5}$  to  $1\frac{2}{3}$ ,  
forked; least depth of caudal

270

peduncle  $3\frac{4}{5}$  to 4; pectoral  $2\frac{1}{4}$  to  $2\frac{2}{5}$ ; ventral 1 to  $1\frac{1}{8}$ .

Pale brown above, lighter below. Back and side with slightly waved to somewhat irregular longitudinal deep brown lines, usually following courses of scales and enclosing gray band about equal in width to interspace between succeeding band. Scapula with deep brownish. Nape and top of head irregularly mottled with deep brown lines, streaks and blotches. Iris pale brown. Fins



very pale brownish.

6845. Kowloon market, China.

October 20, 1908. Length 235 mm.

5833 U.S.N.M. Garden Key, Florida.  
Whitehurst. Length 175 mm.

16951 U.S.N.M. Wood's Holl, Mass. 1876.  
V. N. Edwards. Bureau of Fisheries.  
Length 58 mm.

21917 U.S.N.M. Wood's Holl, Mass. 1876.  
V. N. Edwards. Bureau of Fisheries.  
Length 127 mm.

33122 U.S.N.M. Cuba. Prof. F. Poey.  
Length 160 mm.

43320 U.S.N.M. Bahia, Brazil.  
Allutross Station 1887.  
Length 140 to 150 mm. 2 examples.

44103 U.S.N.M. Wood's Holl, Mass.  
V. N. Edwards. Bureau of Fisheries.  
Length 79 mm.

48826 U.S.N.M. Maroubra, New-  
South Wales. J.D. Ogilby. Length 22  
to 46 mm. As Goodella hypogona.

49483 U.S.N.M. Tokyo, Japan.  
Albatross Station. Length 140 mm.

51035 U.S.N.M.  
Bureau of Fisheries 03798. Length 182 mm.

55271 U.S.N.M.  
Albatross Collection.  
Length 62 to 133 mm. 5 examples.

55372 U.S.N.M. Honolulu.  
Albatross Collection 1902. Length 140 mm.

56218 U.S.N.M. Philippines.  
Bureau of Fisheries 4129. Length 199 mm.

59775 U.S.N.M. Kochi, Japan.  
May 7, 1903. Dr. H. M. Smith. Length 118 mm.

62345 U.S.N.M. Wakanoura, Japan.  
A. S. Jordan and J. D. Snyder. Length 66 mm.



64644 U.S.N.M. Tokyo, Japan.  
K. Otsuki. Length 193 mm.

71067 U.S.N.M. Otsuki, Japan.  
Albatross Collection. Length 333 mm.

71102 U.S.N.M. Misaki, Japan.  
Albatross Collection 1906. Length 86 to  
94 mm. 2 examples.

71468 U.S.N.M. Shimizu, Japan.  
Albatross Collection 1906.  
Length 77 to 112 mm. 2 examples.

71469 U.S.N.M. Kagoshima, Japan.  
Albatross Collection. Length 108 to 152  
mm. 9 examples.

76631 U.S.N.M. Takao, Formosa.  
Dr. Fred Baker. Length 50 to 180 mm.  
12 examples.

83783 U.S.N.M.  
Albatross Station 2725.  
Length 28 to 38 mm. 4 examples.

2975  
83784 U.S.N.M. St. Thomas, West  
Indies. Albatross Station. 1884  
Length 90 mm.

83895 U.S.N.M.  
Albatross Station 2611.  
Length 133 mm.

88093 U.S.N.M. Tortugas, Florida.  
June-August 1926. Prof. W. H. Langley.  
Length 210 mm.

Genus Xystodes GilbyXystodes Gilby, Proc. Royal Soc.

Queensland, vol. 23, Nov. 7, 1910, p. 5.

Type Xystodes benfieldi Gilby, monotypic.

Body depressed, slender, little wider than deep. Head moderate. Eye rather small, adipose lids vestigial. Teeth in jaws unequal, uniserial, long compressed widely separated sagittate fangs and between each pair 1 or 2 much shorter obtusely pointed ones; palatine teeth similar, acicular, biserial, form long narrow band; 2 strong series on hyoid; multiserial patch anteriorly on tongue. Nostrils well separated, anterior circular and cirrigerous,



posterior oblique slit below level of anterior. Frontal groove smooth in front, profusely pierced by small pores behind, continuous with occipital groove. Scales present.

No lateral line. Dorsal origin midway between snout tip and caudal base.

No adipose fin. Anal longer than dorsal, similar. Pectorals small, rounded. Ventrals with 8 rays.

Vent much nearer ventral than anal.

One species.

Xystodus bonfieldi Ogilby

Xystodus bonfieldi Ogilby, Proc. Royal  
Soc. Queensland, vol. 23, Nov. 7, 1910, p. 6.

Near Junk Island, Queensland.

Depth  $7 \frac{1}{5}$ ; head  $3 \frac{3}{5}$ . Snout  
 $4 \frac{1}{4}$  in head; eye  $6 \frac{4}{5}$ ,  $1 \frac{3}{5}$  in snout;  
mouth cleft  $1 \frac{3}{5}$ ; interorbital  $1 \frac{1}{4}$   
in eye, concave.

Scales 51 in lateral series;  
13 transversely.

D. 11, nearly high as long, height  
 $1 \frac{9}{10}$  in head; A. 14, thrice long as  
high,  $\frac{1}{4}$  longer than dorsal;  
middle caudal rays  $2 \frac{1}{2}$  in upper  
lobe; caudal peduncle deep as  
wide, without keel; pectoral rays  
13, reaches ventral base, length  
 $2 \frac{1}{4}$  in head; ventral  $1 \frac{1}{10}$ , not  
reaching vent.

2979

Lilac, each scale of back with dark median stripe, often forked terminally and form together <sup>9</sup> narrow longitudinal pencillings. Purplish lateral band about half scale wide

from upper part of opercle to caudal base, dividing lilac of back from yellowish white of lower half of body; anteriorly, to above pectoral, band black and from lower edge gives off 12 short subcruciform bars to encroach on lighter color below; these bars much larger and darker in front and gradually fade away behind. Head spotted with violet and with transverse dark edged bands between eyes and 3 similar bands directed forward and downward from eye to and upon premaxillary. Base and middle rays of caudal and base of pectoral yellow. Length 142 mm. (Ogilby.)

Queensland.



Genus Synodus Gronow

2980

Synodus Gronow, Mus. Ichth., vol. 2, 1763,  
no. 157. Species nonbinomial. (Type Esox synodus  
Linnaeus). — Scopoli, Introd. Hist. Nat., 1777, p.

449. Type Esox synodus Linnaeus.

Tirus Rafinesque, Carrat. Mus. Animal. Piem.  
Sicilia, 1810, p. 56. Type Tirus marmoratus

Rafinesque, monotypic.

Saurus Cuvier, Règne Animal, vol. 2, 1817, p. 169.  
Type Salmo saurus Linnaeus, tantotypic.

Alpismaris Risso, Hist. Nat. Eur. MÉR., vol. 3,  
1826, p. 458. Type Alpismaris risso Risso,

Body elongate, more or less depressed or compressed. Head depressed. Snout triangular, pointed. Eye moderate, greatly advanced. Jaws subequal. Premaxillaries not protractile, very long, strong, more than half of head. Maxillary closely connected with premaxillary and very small or obsolete. Teeth in jaws in 1 to 2 series, large, compressed, knife like, inner and larger depressible. Palatine teeth similar, smaller, in single broad

2982

band each side of palate. Patch of strong depressible teeth on front of tongue. Gill membranes slightly connected. Gill rakers very minute spinules. Pseudobranchiae well developed. Branchiostegals 12 to 16. Stomach with long blind sac and many pyloric coeca. Supraorbital projected little above eye. Scales cycloid, moderate, adherent. Lateral line axial. Dorsal short, premedian. Anal short. Caudal narrow, forked. Pectoral moderate, inserted high.



Ventral anterior, not far behind  
pectoral, large, inner rays longer,  
rays 8. Vent postmedian.

The following postlarval likely this  
genus not identifiable:

83783 U.S.N.M.

Albatross Station 2725.

Length 30 to 40 mm. 4 examples.

band each side of palate. Patch  
of strong depressible teeth on front  
of tongue. Scales moderate, cycloid,  
adherent. L

2989

Analysis of species

a. Scales larger, 43 to 52; lateral line usually with blunt posterior beaks.

b. Anal longer than dorsal, with 15 rays.  
sageneus.

b.<sup>2</sup> Anal about long as dorsal, with 10 to 12 rays.

c.<sup>2</sup> Front dorsal rays reach to or beyond following rays when depressed; lower jaw ends in fleshy point or knob; no black blotch on shoulder girdle; dorsal and caudal without bars.

d. Pectoral short, reaches slightly beyond ventral base, 2 to 2 1/5 in head; ventral long, only slightly less than head, reach more than 1/2 to anal origin; gill covers with pale lining.

e. Eye 4 1/5 to 4 3/4; dorsal fin uniform.  
poeys.



2985  
e.<sup>2</sup> Eye 4; dorsal fin barred with darker. dominicensis.

d.<sup>2</sup> Pectoral long, reaches past ventral base to about middle of ventral,  $1\frac{2}{5}$  to  $1\frac{3}{4}$  in head; ventral short, little less than postorbital, not reaching over  $\frac{1}{2}$  to anal origin; gill covers with dark lining. evermanni.

c.<sup>2</sup> Front dorsal rays not reaching tips of following rays when depressed; lower jaw with obtuse tip; black blotch just back of upper front angle of opercle on shoulder girdle; dorsal and caudal with dark bars; gill covers with dark lining. intermedius.

a.<sup>2</sup> Scales smaller 58 to 70 in lateral line; lateral line without keel.

f.<sup>1</sup> Anal rays 8 to 10.

g.<sup>1</sup> Mouth cleft extends little beyond eye. simulans.

f.<sup>2</sup> Mouth cleft well extended beyond eye.

k.<sup>1</sup> Scales 4 ( $3\frac{1}{2}$ ) above lateral line.

i.<sup>1</sup> Dorsal 11; Anal 10; snout slightly longer than wide. kaianus.

i.<sup>2</sup> Dorsal 13; Anal 8 or 9.

f.<sup>1</sup> Head  $3\frac{2}{5}$ .

k.<sup>1</sup> Snout wide as long; dorsal and caudal spotted; gill membranes uniform. indicus.

k.<sup>2</sup> Snout broader than long; dorsal and caudal uniform; upper parts of gill membranes with dark blotches. similis.

f.<sup>2</sup> Head  $3\frac{3}{5}$  to  $3\frac{7}{8}$  (3 in young). nicholsi.

2987  
h.<sup>2</sup> Scales 5 (4½) above lateral line.

h.<sup>1</sup> Scales 58 to 61 in lateral line.

m.<sup>1</sup> Indo Pacific species.

n.<sup>1</sup> Eye little wider than interorbital and scarcely more than half long as snout; body markings indefinite, fins uniform.  
houlti.

n.<sup>2</sup> Eye much wider than interorbital and more than half long as snout; body with distinct dark cross bars; fins with brown spots.  
japonicus.

m.<sup>2</sup> Atlantic species. synodus.

L.<sup>2</sup> Scales 68 in lateral line. lucertinus.

f.<sup>2</sup> Anal rays 11.

a.<sup>1</sup> Snout not broader than long; more than 10 scales in cross



count from dorsal to ventral;  
lower jaw shorter.

p.<sup>1</sup> Four rows of scales between  
lateral line and adipose fin;  
cheeks with 4 to 7 rows of  
scales.

q.<sup>1</sup> Cheek with 6 or 7 rows of  
scales; eye  $4\frac{1}{2}$  to  $7\frac{1}{2}$ ;  
scales 56 to 64.

r.<sup>1</sup> Anal usually 11. foetens.

r.<sup>2</sup> Anal usually 13. scituliceps.

q.<sup>2</sup> Cheek with 4 rows of scales;  
eye 4; scales 55. acutus.

p.<sup>2</sup> Six rows of scales between  
lateral line and adipose fin;  
cheeks with 9 rows of scales.  
lucioceph.

o.<sup>2</sup> Snout very wide, broader  
than long; 10 scales in cross  
count from dorsal to ventral;

jaws subequal.

2. Dorsal scarcely higher  
than long. Taurus.

3. Dorsal considerably  
higher than long. altipinnis.

Synodus saginatus Waite

Synodus saginatus Waite, Records

Illustration Mus., vol. 6, pt. 2, Sep. 15,

1905, p. 58, pl. 8, fig. 1, Between Fremantle  
and Houtman's Abrothos, West<sup>ern</sup> Australia.

Depth  $7\frac{2}{3}$ ; head  $3\frac{2}{3}$ , Snout  $4\frac{7}{8}$   
in head; eye  $7\frac{1}{10}$ ,  $1\frac{1}{2}$  in snout;  
1 in interorbital; maxillary extends  
2 eye diameters behind eye, length  
 $1\frac{2}{3}$  in head; interorbital low, orbit  
cutting in profile.

Scales 52 in lateral line; 4  
above, 4 below, 7 rows on cheek.

D. II, 10, first branched ray  
 $1\frac{7}{8}$  in head; adipose fin?;  
A. 15, third ray 4; caudal  
 $1\frac{2}{5}$ , deeply forked; least depth  
of caudal peduncle  $4\frac{7}{8}$ ; pectoral



2991

$2\frac{2}{5}$ ,  $1\frac{7}{8}$  in postocular; ventral  
 $1\frac{1}{10}$  in head.

Yellow above, silvery beneath.  
All scales broadly margined with  
yellowish brown, especially on lower  
surface. Length 265 mm. (Waite.)

Western Australia.

Synodus poeyi Jordan

Synodus poeyi Jordan, Proc. U. S. Nat. Mus., vol. 9, 1886, p. 526. Havana. —

Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 536 (compiled). —

Meek and Hildebrand, Field Mus. Nat.

Hist. Publ. no. 215, Zool. Ser. vol. 15, <sup>pt. 1,</sup> Dec. 20, 1923, p. 218 (Fox Bay, Colon, Porto Bello).

Synodus intermedius (not Agassiz) Poey,

Enumeratio Pisc. Cuba, 1875, p. 143

(part). — Meek, Proc. Acad. Nat. Sci.

Philadelphia, 1884, p. 132 (Havana).

*Synodus jordanicus*



Depth 6 to  $8\frac{2}{5}$ ; head  $3\frac{1}{4}$  to  $3\frac{2}{3}$ , width  $1\frac{9}{10}$  to  $2\frac{1}{4}$ . Snout  $3\frac{2}{3}$  to 4 in head from snout tip; eye  $4\frac{1}{5}$  to  $4\frac{3}{4}$ , 1 to  $1\frac{1}{8}$  in snout, greatly exceeds interorbital; premaxillary extends  $\frac{1}{2}$  to  $\frac{3}{4}$  eye diameters behind eye, length  $1\frac{2}{3}$  to  $1\frac{4}{5}$  in head from snout tip; interorbital  $4\frac{1}{2}$  to 5, concave. Gill rakers as minute numerous spinules; gill filaments  $1\frac{1}{2}$  in eye.

Scales 41 or 42 in lateral line to caudal base and 3 more on latter; 4 above, 5 below, 12 or 13 predorsal,

4 rows on postocular to hind preopercle ridge. Scales with 3 basal radiating striae; circuli fine, not extended apically.

D. IV, 9, I or II, 10, I, first branched ray  $1\frac{1}{3}$  to  $1\frac{1}{2}$  in total head length; adipose fin  $5\frac{2}{5}$  to  $5\frac{1}{2}$ ; A. I, 8, I, first branched ray  $2\frac{3}{4}$  to  $2\frac{4}{5}$ ; caudal  $1\frac{2}{5}$  to  $1\frac{1}{2}$ , deeply forked; least depth of caudal peduncle  $3\frac{1}{2}$  to 4; pectoral 2 to  $2\frac{1}{8}$ ; ventral  $1\frac{1}{6}$  to  $1\frac{1}{5}$ .

Back brown, mottled with darker. Four dusky transverse rather narrow

bands on back. Along lateral line  
 8 dark blotches, below and in each  
 interspace smaller dark spot, also  
 dark spot may join or oppose larger  
 dark blotches of lateral line. No  
 dark blotch on shoulder girdle.  
 Iris silvery.  
 Dorsal and caudal grayish. Paired fins  
 and anal whitish.

Caribbean Sea.

79619 U.S.N.M. Fox Bay, Colon, Panama.  
 January 22, 1912. S.E. Meek and S.F.  
 Hildebrand. Length 82 to 88 mm. 5 examples.

79632 U.S.N.M. Porto Bello, Panama.  
 March 19, 1912. S.E. Meek and S.F. Hildebrand.  
 Length 50 to 64 mm. 3 examples.



Synodus dominicensis Fowler

2996

Synodus dominicensis Fowler, Proc. Acad.  
Nat. Sci. Philadelphia, 1911 (1912), p.  
564, fig. 2. Santo Domingo; Copeia, no.  
24, Nov. 19, 1915, p. 50 (type).

Depth  $6\frac{1}{4}$ ; head  $3\frac{2}{3}$ , width  $2\frac{1}{5}$ .

Snout  $3\frac{3}{4}$  in head from snout tip;  
eye 4,  $1\frac{1}{5}$  in snout, greater than  
interorbital; premaxillary reaches  $\frac{1}{3}$   
of eye diameter behind eye, length  
 $1\frac{2}{3}$  in head from premaxillary tip;  
interorbital  $4\frac{3}{4}$ , slightly concave.  
Gill rakers minutely spinescent,  
numerous; gill filaments  $\frac{1}{3}$  of eye.

✓ Scales 43 in lateral line to

Bay). — Fowler, Copeia, no. 58, June 18, 1918, p.  
62 (Philippines). — Mori, Journ. Pan  
Pacific Research Inst., vol. 3, no. 3, July-Sep.  
1928, p. 4 (Korea).

Ulopus elongatus Schlegel, Fauna Japonica,  
Pois., pt. , 1847, p. 233, pl. 105, fig. 2. Nagasaki.

Saurida triculenta Macleay, Proc. Linn. Soc.  
New South Wales, vol. 6, pt. 2, Sep. 12, 1881, p.  
219. Port Jackson.

Saurida australis Castelnau, Proc. Linn. Soc.  
New South Wales, vol. 3, 1879, p. 393. Port Jackson.

— Macleay, Proc. Linn. Soc. New South Wales, vol. 6,  
1881, p. 218 (reference).

? Saurida ferox (not Eydoux and Schlegel) Ramsay,  
Proc. Linn. Soc. New South Wales, vol. 8, pt. 1, June 19,

caudal base and 6 more on latter;  
 4 above, 6 below, 14 predorsal, 4  
 rows on postocular.

D. II, 9, I, first branched ray  $1\frac{2}{5}$   
 in total head length; adipose fin  $6\frac{1}{2}$ ;  
 A. 10, I, third ray  $2\frac{3}{4}$ ; caudal  $1\frac{3}{5}$ ,  
 forked; least depth of caudal peduncle  
 $4\frac{1}{5}$ ; pectoral  $2\frac{1}{6}$ ; ventral  $1\frac{4}{5}$ .

Dull brownish, paler below. Back  
 with traces of fine and slightly darker  
 mottlings made up of small spots and



2978  
lines. Head brownish above, paler  
below. Scapular arch above with  
several faded small dark brown  
spots. Each dorsal ray with 5-deep  
brown spots, rest of fin pale. Caudal  
pale, except about 3 diffuse brownish  
shades over each lobe along inner  
edge. Other fins all pale, unicolor.  
Iris coppery.

Santo Domingo.

15883 A.N.S.P. Santo Domingo, West Indies.  
William M. Gabb. Length 76 mm. Type.

Synodus evermanni Jordan and Bollman

Synodus evermanni Jordan and Bollman,  
Proc. U. S. Nat. Mus., vol. 12, 1889, p. 152.

N.  $8^{\circ} 6' 30''$  W.  $78^{\circ} 51'$ ; N.  $7^{\circ} 57'$  W.  $78^{\circ} 55'$ ;

Pacific Ocean off Colombia. — Jordan and  
Evermann, Bull. U. S. Nat. Mus., no. 47,  
pt. 1, 1896, p. 535 (compiled). ✓

— Gilbert and Starke, Mem. California  
Acad. Sci., vol. 4, 1904, p. 49 (Panama  
Bay). — Meek and Hildebrand, Field  
Mus. Nat. Hist., Publ. no. 215, Zool.  
Ser., vol. 15, <sup>pt. 1</sup> Dec. 20, 1923, p. 219 (Chame  
Point).

to subequal with age; adipose eyelids  
marginal, very narrow; premaxillary  
reaches half eye diameter behind  
eye, length  $1\frac{3}{4}$  to  $1\frac{5}{6}$  in head;

2999

Synodus evermanni Jordan and Bollman

Synodus evermanni Jordan and Bollman,  
Proc. U. S. Nat. Mus., vol. 12, 1889, p. 152.

N.  $8^{\circ}6'30''$  W.  $78^{\circ}51'$ ; N.  $7^{\circ}57'$  W.  $78^{\circ}55'$ ;

Pacific Ocean off Colombia. — Jordan and  
Evermann, Bull. U. S. Nat. Mus., no. 47,  
pt. 1, 1896, p. 535 (compiled). ✓

Snout  $5\frac{2}{3}$  to  $7\frac{1}{4}$ ; head 3 to  $3\frac{2}{5}$ ,  
width  $2\frac{1}{8}$  to  $2\frac{1}{5}$ . Snout 4 to  $4\frac{1}{8}$  in  
head; eye 4 to 5, 1 to  $1\frac{1}{6}$  in snout,  
greater than interorbital in young  
to subequal with age; adipose eyelids  
marginal, very narrow; premaxillary  
reaches half eye diameter behind  
eye, length  $1\frac{3}{4}$  to  $1\frac{5}{6}$  in head;



interorbital 4 to  $4\frac{1}{4}$ , concave. Gill rakers numerous, fine, minute spinules; gill filaments  $1\frac{2}{5}$  in eye.

Scales 52 or 53 in lateral line to caudal base and 3 more on latter; 5 above, 6 below, 16 predorsal, 4 postocular rows to preopercle ridge. Pectoral axillary scale  $\frac{1}{4}$  of fin, ventral axillary scale  $\frac{1}{3}$  of fin. Scales with 3 basal radiating striae, edge scalloped; circuli very fine, not extending apically.

D. II, 9, I, first branched ray

3001

$1\frac{2}{5}$  to  $1\frac{5}{6}$  in total head length;  
adipose fin  $5\frac{3}{4}$  to 6; A. III, 8, I,  
first branched ray  $2\frac{2}{3}$  to  $3\frac{2}{5}$ ;  
caudal  $1\frac{3}{5}$  to  $1\frac{3}{4}$ ?, well forked;  
least depth of caudal peduncle  
5 to 6; pectoral  $1\frac{1}{2}$  to  $1\frac{3}{4}$ ; ventral  
 $1\frac{3}{5}$  to  $1\frac{4}{5}$ .

Back brown, mottled with paler,  
lower and under surfaces whitish.  
Along lateral line 8 to 10 dark brown  
blotches, each usually giving off  
small dark spot below and  
alternate one in each interspace.

also below. Iris silvery white. Opercle  
clouded darker. Dorsal and pectoral  
brownish. Adipose fin brown, with  
pale edge. Other fins paler.

Off Colombia.



41144 U.S.N.M. N.  $57^{\circ}$  W.  $78^{\circ}55'$   
Galapagos Island.

Albatross Station . Length 140  
to 195 mm. 12 examples. Types.

41398 U.S.N.M.  
Albatross Station 2797.  
Length 134 mm.

41424 U.S.N.M. N.  $70^{\circ}56'$  W.  $79^{\circ}41'$   
Albatross Station .  
Length 215? mm.

46466 U.S.N.M.  
Albatross Station 3044.  
Length 128 to 147 mm. 4 examples.

46482 U.S.N.M.  
Albatross Station 3038.  
Length 100 to 137 mm. 3 examples.

46484 U.S.N.M.  
Albatross Station 2830.  
Length 203 to 228 mm. 2 examples.

46585 U.S.N.M.

Albatross Station 3012.

Length 108 mm.

54620 U.S.N.M.

Albatross Station 2830.

Length 225? mm.

61517 U.S.N.M.

Albatross Station 3043.

Length 125 mm.

81969 U.S.N.M. Chame Point, Panama.  
March 8 to 14, 1913. Robert Tweedie.

Length 40 mm.

Synodus intermedius (Agassiz)

Saurus intermedius Agassiz, Pisc.

Brasil., Spix, 1829, p. 81, pl. 44.

Brazil. — Günther, Cat. Fishes Brit.

Mus., vol. 5, 1864, p. 396 (Jamaica,  
Demerara, South America); Rep.

Voy. Challenger, vol. 1, pt. 6, 1880, p. 50

(Arafura Sea). — Weber and Beaufort,

Fishes Indo Austral. Archipelago,

vol. 2, 1913, p. 146 (West Indian specimen).

— Metzelaar, Rapp. Kolonie Curaçoa,

vol. 2, pt., 1919, p. 214 (compiled).



Saurus (Synodus) intermedius  
Metzelaar, Rapp. Kolonie Curaçoa,  
vol. 2, pt. 1, 1919, p. 21 (Curaçao).

Laurida intermedia Swainson, Nat.  
Hist. Animals, vol. 2, 1839, p. 288  
(on Agassiz).

Synodus intermedius Poey, <sup>✓</sup>Enumeratio  
 Syn. Pisc. Cuba, 1868, p. 414 (Cuba);  
 and Gilbert, Bull. U. S. Nat. Mus., no. 16,  
 1882, p. 889 (compiled). — Weeks, Proc.  
 Acad. Nat. Sci. Philadelphia, 1884, p.  
 132 (part). — Jordan and Evermann,  
 Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p.  
 535 (compiled). — Fowler, <sup>Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 564 (St. Croix);</sup> Mem. Bishop  
 Mus., vol. 10, 1928, p. 64 (compiled).

— Weeks and Hildebrand, Field Mus. Nat.  
 Hist. Publ. no. 215, Zool. Ser., vol. 15, pt.  
 1, Dec. 20, 1923, p. 217 (Florida, Bermuda,  
 Cuba). — Fowler,

Synodus intermedius Poey, Enumeratio  
Pisc. Cub., 1875, p. 143 (Cuba). — Jordan  
and Gilbert, Bull. U. S. Nat. Mus., no. 16,  
 1882, p. 889 (compiled). — Weeks, Proc.  
Acad. Nat. Sci. Philadelphia, 1884, p.  
 132 (part). — Jordan and Evermann,  
Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p.  
 535 (compiled). — Fowler, Mem. Bishop  
Mus., vol. 10, 1928, p. 64 (compiled).

— Weeks and Hildebrand, Field Mus. Nat.  
Hist. Publ. no. 215, Zool. Ser. vol. 15, pt.  
 1, Dec. 20, 1923, p. 217 (Florida, Bermuda,  
 Cuba). — Fowler,



— Jordan and Gilbert, Bull. U. S. F.

P. 12

Am. St.

Saurus anolis Valenciennes, Hist. Nat.  
Poiss., vol. 22, 1849, p. 483. Guadeloupe,  
Bahia, Martinique.

Synodus anolis Meek, Proc. Acad. Nat.  
Sci. Philadelphia, 1884, p. 133 (type;  
Key West).

Synodus cubanus Poey, Enumeratio Pisc.  
Cub., 1875, 143. Cuba.

Depth 6 to  $10\frac{1}{2}$ ; head  $2\frac{2}{5}$  to 4, width  
2 to  $2\frac{1}{4}$ . Snout  $3\frac{1}{5}$  to 4 in head from  
snout tip; eye  $3\frac{3}{5}$  to 8,  $1\frac{7}{8}$  to  $2\frac{1}{5}$  in  
snout, -greater than snout in young,  
greater than interorbital in young to  
 $1\frac{3}{5}$  in interorbital with age;  
premaxillary extends back  $\frac{1}{4}$  to 2 eye

Laurida Swainson, Nat. Hist. Animals,  
vol. 2, 1839, p. 287. Type Salmo  
foetens, <sup>(not</sup> Linnaeus) <sup>Bloch</sup> designated by Swain,  
Proc. Acad. Nat. Sci. Philadelphia,  
1882, p. 279.



diameters behind eye, length  $1\frac{2}{3}$  to  $1\frac{3}{4}$  in head from snout tip; interorbital  $4\frac{1}{10}$  to  $4\frac{3}{4}$ , rather evenly concave. Gill rakers minute villiform denticles; gill filaments equal eye.

Scales 47 to 49 in lateral line to caudal base and 4 more on latter; 4 or 5 above, <sup>6 or</sup> 7 above, 18 to 23 predorsal, 7 rows on postocular. Axillary ventral scale <sup>3 to</sup>  $3\frac{1}{4}$  in fin. Scales with 3 basal radiating striae, edge scalloped; circuli very fine, not extending apically.

Synodus intermedius (Agassiz)

Xanopus intermedius Agassiz, Pisc. Brasil.

Spix, 1829, p. 81, pl. 44. Brazil. — Günther,

Cat. Fishes Brit. Mus., vol. 5, 1864, p. 396.

South America

(Jamaica, Demerara); Rep. Voy. Challenger,

vol. 1, pt. 6, 1880, p. 50 (Gulf of Mexico). —

Weber and Beaufort, Fishes Indo Austral.

Archipelago, vol. 2, 1913, p. 146 (West

Indian specimen). — Metzelaar, Rapp.

Kolonie Curaçoa, vol. 2, pt. 1, 1919, p. 214 (compiled).

Xanopus quoyi Valenciennes, Hist. Nat. Poiss.,

vol. 22, 1849, p. 483. Guadeloupe, Bahia,  
Martinique.

Synodus intermedius Fowler, Mem. Bishop

(Mus., vol. 10, 1928, p. 64 (compiled)).

Laurida intermedia Swainson, Nat. Hist.  
Animals, vol. 2, 1839, p. 288 (on Agassiz).

D. II, 9, I to II, 11, I, first branched ray  $1\frac{4}{5}$  to  $1\frac{9}{10}$  in total head length; adipose fin  $7\frac{3}{4}$ ; A. II, 9, I to II, 11, I, first branched ray 3; caudal  $1\frac{2}{5}$  to  $1\frac{2}{3}$ , forked; least depth of caudal peduncle  $4\frac{1}{5}$  to  $5\frac{1}{5}$ ; pectoral  $2\frac{1}{8}$  to  $2\frac{1}{3}$ ; ventral  $1\frac{1}{5}$  to  $1\frac{1}{3}$ .

Brown above, with 9 dark transverse band like blotches along sides and slightly narrower ones alternately in intervals. On sides below lateral line and lower surfaces mostly each row of scales



with slightly paler or very pale yellowish blotch, 2 lowest rows of sides continuous and other 2 distinct crossing dark blotches. Some dark clouding on lower sides of head, also under surfaces of same. Dorsal and caudal with rather obscure dark transverse bands or series of blotches. Other fins uniformly pale or brownish.

West Indies, Caribbean Sea, Brazil, East Indies.

3012

9829 U.S.N.M. Cuba. Prof. F. Poey.  
Length 324 mm.

21383 U.S.N.M. Bermuda.  
Length 275 to 287 mm. 2 examples.

21890 U.S.N.M. Bermuda.  
Dr. G. B. Goode. Length 383 to 419 mm.  
2 examples.

23814 U.S.N.M. Bermuda.  
Dr. G. B. Goode. Length 424 mm.

30715 U.S.N.M. Key West, Florida.  
William Stimpson. Length 280 mm.

31383 U.S.N.M. Bermuda.  
Dr. G. B. Goode. Length 283 to 290 mm.  
3 examples.

31914 U.S.N.M. Pensacola, Florida.  
Silas Stearns. Length 235 mm. Poor.

32623 U.S.N.M. Florida.  
Length 273 mm.

32803 U.S.N.M. Pensacola, Florida.  
Silas Stearns. Length 77 to 183 mm.  
2 examples.

35045 U.S.N.M. Key West, Florida.  
Length 320 mm.

35183 U.S.N.M. Havana, Cuba.  
Dr. D. V. Jordan. Length 88 to 96 mm.  
2 examples.

38711 U.S.N.M. Key West, Florida.  
Length 330 mm.

91818 U.S.N.M. British Honduras.  
Dr. R. D. Shufeldt. Length 35 mm.

92050 U.S.N.M. South of Tortugas.  
Prof. W. H. Longley. Length 260 mm.

1 example U.S.N.M.  
Albatross Station 2317.  
Length 295 mm. is Synodus anolis.



A.N.S.P. St. Croix, West Indies.

Dr. R. E. Griffiths. Length 348 mm.

Dried skin. Pale brown, paler below. Back mottled darker, formed by deep brown blotch at base of each scale. Ten obscure brownish blotches along side. Scapular arch above with large dusky blotch. Iris brown. Fins pale brown, each dorsal ray with 5 deeper diffuse brownish blotches and each caudal lobe with 6 transverse bars of same shade, narrower on upper and lower edges of fin and broadly expanding towards inner edges of lobes. Other fins apparently uniform.

Synodus simulans (Garman)

Synodus simulans Garman, Mem.

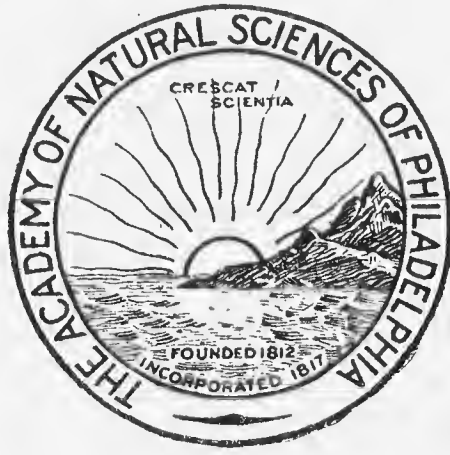
Mus. Comp. Zool., vol. 24, 1899, p. 251,  
pl. 50, fig. 3. Off. Cocon Islands.

Depth 7; head 4. Snout  $4\frac{1}{3}$   
in head; eye 5, greater than snout;  
premaxillary extends half an eye  
diameter behind eye, length 2  
in head; very low interorbital  
with narrow groove.

Scales 62 in lateral line, 4  
above, 4 below.

D. 12, second ray  $2\frac{1}{5}$  in head;  
adipose fin  $7\frac{1}{5}$ ; A. 9, second ray 6;  
caudal  $1\frac{2}{5}$ , emarginate behind; least  
depth of caudal peduncle  $4\frac{1}{6}$ ;  
pectoral 2, ~~ventrals~~  $1\frac{1}{10}$  in  
postorbital; ventral  $1\frac{1}{3}$ .

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OF PHILADELPHIA



JAMES A. G. REHN  
SECRETARY

LOGAN SQUARE  
PHILADELPHIA, PA.



yellowish white, slight brownish  
cast on back. Seven pairs of narrow  
transverse brown streaks across back,  
first at front of dorsal base. Dark  
brown transverse streak at caudal  
base. Below and parallel with lateral  
line from below pectoral 11 horizontally  
oblong brown spots and last before  
anal fin, each larger than pupil and  
in posterior half contains round black  
spot nearly half as large. Fins light,  
caudal very little darker backward.  
Length 54 mm. (Garman.)

Synodus kaianus (Günther)

Saurus kaianus Günther, Rep. Voy.

Challenger, vol. 1, pt. 6, 1880, p. 50, pl. 23,  
fig. C. Ki Islands, in 129 fathoms;  
vol. 22, 1887, p. 180 (type).

Synodus kaianus Gilbert, Bull. U.S.  
Fish Comm., vol. 23, pt. 2, 1903 (1905), p.  
558 (Paololo Channel off northern  
Hawaii, in 122 to 178 fathoms). —

Weber and Beaufort, Fishes Indo  
 Austral. Archipelago, vol. 2, 1913, p.  
148 (compiled). — Fowler, Mem. Bishop  
Mus., vol. 10, 1928, p. 65 (compiled).

Depth  $5\frac{4}{5}$ ; head  $3\frac{2}{5}$ . Snout  $3\frac{1}{3}$  in head; eye  $5\frac{1}{5}$ ,  $1\frac{2}{5}$  in snout; maxillary extends  $\frac{3}{4}$  eye diameter behind eye, length  $1\frac{3}{5}$  in head; interorbital low, slightly concave, narrower than eye; frontal bones without sculpture.

Scales 63 in lateral line; 4 above, 6 below, 17 predorsal, 7 rows on cheek.

D. II, 10, first branched ray  $2\frac{2}{5}$  in head; adipose fin 7; A. 10, fourth ray 4; caudal  $1\frac{1}{2}$ , well



forked; least depth of caudal peduncle  $4\frac{1}{2}$ ; pectoral 2,  $1\frac{1}{8}$  in postocular; ventral  $1\frac{2}{5}$  in head.

Upper parts greenish, lower silvery. Series of blackish spots alternately larger and smaller along middle of body. Length 140 mm.

(Günther.)

Ki Islands and Hawaiian Group.  
Gilbert's material I have not seen.

Synodus indicus (Day)

Saurus indicus Day, Journ. Linn. Soc.

London, vol. 11, Zool., 1873, p. 526. Madras;  
Fishes of India, pt. 3, 1877, p. 503,  
pl. 117, fig. 4; Fauna British India,  
vol. 1, 1889, p. 409.

Depth  $6\frac{1}{2}$ ; head  $3\frac{2}{5}$ . Snout 4 in head; eye 5,  $1\frac{1}{3}$  in snout; maxillary extends  $1\frac{1}{4}$  eye diameters behind eye, length  $1\frac{2}{5}$  in head; interorbital low, concave.

Scales 55 to 57 in lateral line; 4 above, 4 below, 17 predorsal, 5 rows on cheek.

D. 13, third simple ray  $1\frac{7}{8}$  in head; adipose fin  $1\frac{1}{2}$  in eye; A. 9, third ray 3; caudal  $1\frac{2}{5}$ , well forked; least depth of caudal peduncle  $3\frac{5}{6}$ ; pectoral  $2\frac{3}{5}$ ,  $1\frac{2}{5}$  in postocular; ventral

$1\frac{1}{3}$  in head.

Brownish in upper  $\frac{2}{3}$ , dirty white beneath. Numerous bluish irregular spots or blotches along back and sides, in places almost form horizontal bands. Dorsal and caudal white, with grayish spots, forming irregular horizontal bands. Length 178 mm. (Day.)

India.



Synodus similis McCulloch

Synodus similis McCulloch, Mem. Queensland Mus., vol. 7, pt. 3, Nov. 4, 1921, p. 167, pl. 8, fig. 2. Near the Capricorn Group, Queensland, in 25 to 30 fathoms.

Depth 7; head  $3\frac{2}{5}$ . Snout  $4\frac{1}{3}$  in head; eye  $5\frac{7}{8}$ ,  $1\frac{1}{3}$  in snout, greater than interorbital; maxillary reaches  $1\frac{1}{3}$  eye diameters beyond eye, length  $1\frac{3}{4}$  in head; interorbital low, <sup>little</sup> concave.

Scales 58 in lateral line; 4 above, 4 below, 15 predorsal, 5 rows on cheeks.

D. II, 11, I, first branched ray  $1\frac{2}{3}$  in head; adipose fin 7; A. 9, I, third ray  $3\frac{1}{8}$ ; caudal  $1\frac{1}{2}$ ; least depth of caudal peduncle  $5\frac{1}{5}$ ; pectoral  $2\frac{1}{3}$ ,  $1\frac{1}{2}$  in postocular;

ventral  $1\frac{1}{8}$  in head.

Grayish on back, sides and lower surfaces white. Ill defined gray markings form indefinite cross bars and about 8 imperfect rings on lateral line. Gray lines form narrow interrupted rows along each series of scales on upper half. Head with gray spots on opercles and gill membranes ornamented with 2 large black spots on each side above opercle.

Fins without markings. Length 185 mm. from snout tip to end of middle caudal rays. (McCulloch.)  
Queensland.

Synodus nicholsi Breder

3024

Synodus nicholsi Breder, Bull.  
Bingham Oceanogr. Collection, vol. 1,  
art. 1, Oct. 19, 1927, p. 13, fig. 6. Royal  
Island, Eleutheria, Bahamas.

Depth 6 to 7; head  $3\frac{3}{5}$  to  $3\frac{7}{8}$ , width  
 $1\frac{4}{5}$  to 2. Snout  $4\frac{3}{5}$  to  $4\frac{2}{3}$  in head; eye  
 $4\frac{1}{2}$  to 6,  $1\frac{1}{4}$  in snout, equals interorbital  
though greatly exceeds bony interorbital;  
premaxillary extends  $\frac{1}{2}$  to  $1\frac{1}{5}$  eye diameters  
behind eye, length  $1\frac{3}{4}$  to  $1\frac{4}{5}$  in head;  
interorbital  $4\frac{1}{2}$  to  $6\frac{1}{5}$ , concave. Gill  
rakers as numerous minute low spinules;  
gill filaments  $1\frac{2}{5}$  in eye.

Scales 58 in lateral line to caudal



base and 4 more on latter; 4 above,  
6 below, 18 to 21 predorsal, 5 rows on  
postocular to hind preopercle ridge.  
Ventral axillary scale  $2\frac{1}{2}$  in fin.  
Scales with 3 basal radiating striae,  
edge scalloped; circuli fine, not  
extended apically.

D. II, 9, I or II, 10, I, first branched  
ray  $1\frac{2}{5}$  to  $1\frac{2}{3}$  in head; adipose fin  
5 to 6; A. I, 8, I or I, 9, I, longest front  
ray 3 to  $3\frac{1}{3}$ ; caudal  $1\frac{1}{3}$  to  $1\frac{2}{5}$ , well  
forked; least depth of caudal peduncle  
4 to  $4\frac{1}{6}$ ; pectoral  $2\frac{1}{6}$  to  $2\frac{1}{5}$ ; ventral  $1\frac{1}{10}$ .

Back pale brown, with transverse darker cross bands and each interval with narrower cross band. Under surfaces of head and body whitish. Iris whitish. Fins all more or less uniformly pale, lower ones whitish.

Bahamas. The specimens listed below seem to be the present species. The figure published by Breder shows a larger head ( $2\frac{9}{10}$ ), lower jaw slightly protruding and little more advanced dorsal origin.

53078 U.S.N.M. Nassau. July 20, 1903.  
B.A. Bean. Length 71mm. As Trachinocephalus  
myops.

53079 U.S.N.M. Clarence Harbor. July 15, 1903.  
B.A. Bean. Length 130mm. As Trachinocephalus  
myops.

Synodus haulti McCulloch

3027

Synodus haulti McCulloch, Mem. Queensland Mus., vol. 7, pt. 3, no. 4, 1921, p. 165, pl. 8, fig. 1. near the Capricorn Group, Queensland, in 25 to 30 fathoms.

Depth  $6\frac{1}{8}$ ; head  $3\frac{1}{4}$ . Snout  $4\frac{1}{10}$  in head; eye  $8\frac{1}{8}$ , 2 in snout; premaxillary extends 2 eye diameters behind eye, length  $1\frac{2}{3}$  in head; interorbital very slightly less than eye, concave.

Scales 59 in lateral line; 5 above, 4 below, 16 predorsal, 5 or 6 rows on cheek.

D. II, 10, I, first branched ray  $2\frac{1}{4}$  in head; adipose fin 7; A. 9, I, second ray  $3\frac{2}{3}$ ; caudal  $1\frac{2}{3}$ , forked; least depth of caudal peduncle 6; pectoral  $2\frac{2}{3}$ .



$2 \frac{1}{10}$  in postorbital; ventral  $1 \frac{1}{4}$   
in head.

Grayish on back, sides and  
below white. Some very ill defined  
cross bars on back, most prominent  
at base of tail and some darker  
markings above lateral line. Head  
above with vermiculating <sup>gray</sup> lines.  
extend to lips near end of snout.  
Fins without markings. Length  
203 mm. (McCulloch.)

Queensland

309

Synodus japonicus (Houttuy<sup>n</sup>)  
Lobites japonica Houttuy<sup>n</sup>, Verhandel.  
Holland. Maatsch.<sup>wet</sup> Haarlem, vol. 20, 1782,  
p. 450. Nagasaki.

Synodus japonicus Jordan and Herre,  
Proc. U. S. Nat. Mus., vol. 32, 1907, p. 516  
(Wakanoura; Nagasaki). — Jordan and  
Richardson, Bull. Bur. Fisher., vol. 27,  
1907 (1908), p. 237 (Cuyo). — Franz, Abhandl.  
Kön. Bayer. Akad. Wiss., vol. 4, Suppl.  
Band 1, 1910, p. 18 (Yokohama). — Izuka  
and Matsuura, Cat. Zool. Spec. Tokyo Mus.,  
Vertebr., 1920, p. 180 (Misaki). — McCulloch,  
Mem. Queensland Mus., vol. 7, pt. 3, 1921, p. 165  
(Hawking Island, Queensland; Lord Howe Island; Ambrym).

3030

— Fowler, Copeia, no. 112, nov. 20, 1922,  
p. 82 (Hawaii); Bull. Bishop Mus.,  
no. 22, 1925, p. 4 (Guam), p. 23 (Honolulu);  
no. 26, 1925, p. 7 (French Frigates Shoal);  
Proc. Acad. Nat. Sci. Philadelphia, 1925,  
p. 199 (Delagoa Bay); Bull. Bishop  
Mus., no. 38, 1927, p. 7 (Pearl and Hermes  
Reef, Midway Island, Honolulu); Proc.  
Acad. Nat. Sci. Philadelphia, 1927, p. 261  
(Orion); Mem. Bishop Mus., vol. 10, 1928, p.  
64, fig. 12 (Honolulu, Hilo, Laysan, French  
Frigates Shoal, Guam, Karotaga, Tate,  
Mangareva, Shortland Islands, Society  
Islands, Ebon Islands, Fiji, types of Synodus  
dermatogonyx).



3031

Halimovarius Lacépède, Hist. Nat. Poiss.,  
vol. 5, 1803, p. 224, pl. 3, fig. 3. Mauritius.

Schmeltz, Cat. Mus. Godeffroy, no. 4, 1869, p.  
24 (Samoa; Viti Islands). ~~Wasmuth~~

Klunzinger,

Verhandl. zool. botan. Gesell. Wien, vol. 21, 1871,

p. 587 (Red Sea). — Boulenger, Proc. Zool. Soc. London,

— Schmeltz, Cat. Mus. Godeffroy, no. 5, 1874, p. 35  
(Tahiti). — Macleay, Proc. Linn. Soc. New South Wales,  
vol. 7, 1882, p. 572 (New Guinea).

Macleay, Cat. Mus. Godeffroy, no. 11, p. 22. —

Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1909, p.

375 (Hawaii, Pelew, Fiji, Society, Pannotu, Samoa, Tahiti).

Synodus varius Gilby, Mem. Australia Mus.,

Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880,  
p. 36 (Avalau; Fiji).

Denkschr. Akad. Wiss. Wien, naturw. Klasse, vol.

70, 1901, p. 513 (Honolulu, Laysan); Abhandl.

Senckenberg. Gesell., vol. 25, 1900, p. 450 (Ternate).

Salmonvarius Lacépède, Hist. Nat. Paris,  
vol. 5, 1803, p. 224, pl. 3, fig. 3. Mauritius.

Saurus varius Günther, Cat. Fishes Brit. Mus.,  
vol. 5, 1864, p. 395.

) Klunzinger,

Verhandl. zool. botan. Gesell. Wien, vol. 21, 1871,  
p. 587 (Red Sea). — Boulenger, Proc. Zool. Soc. London,  
1887, p. 665 (Muscat). — Ishikawa and Matsuura,

Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 22. —

Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1907, p.  
375 (Hawaii, Pelew, Fiji, Society, Pohnoe, Samoa, Tahiti).

Signodus varius Gilby, Mem. Australia Mus.,  
vol. 2, 1889, p. 71 (Lord Howe Island). — Steindachner,

Denkschr. Akad. Wiss. Wien, <sup>math.-</sup> naturw. Classe, vol.  
70, 1901, p. 513 (Honolulu, Laysan); Abhandl.

Senckenberg. Gesell., vol. 25, 1900, p. 450 (Ternate).



— Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 433 (Honolulu). — Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 521 (Honolulu). — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 28, 1904; p. 125 (Honolulu).

1, 1903 (1905), p. 63, pt. 2, fig. 14 (Hilo; Honolulu).

— Evermann and Seale, Bull. Bur. Fisher., vol.

— Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 588 (off Mototai, Luan Channel, Bird Island, 20 to 73 fathoms). — Seale, Occas. Papers Bishop Mus., vol. 4, no. 1, 1906, p. 5 (Mangareva). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 188 (Samoa).

Xanopus variegatus Quoy and Gaimard, Voy. Uranie,

Zool., 1824, p. 223, pl. 48, fig. 3. Mauritius;

Mauri. — Weber and Beaufort, Fishes Indo

Austral. Archipelago, vol. 2, 1913, p. 149, fig.

56 (description of larva).

Synodus variegatus Seale, Occas. Papers Bishop

Mus., vol. 1, no. 3, 1900 (1901), p. 63 (Guam). —



— Jordan and Snyder, Unnotat. Zool.

Japon., 1901, p. 51

— Jordan and Evermann, Bull. Bur. Fisher., vol. 23, pt.

1, 1903 (1905), p. 63, pl. 2, fig. 14 (Hilo; Honolulu).

— Evermann and Seale, Bull. Bur. Fisher., vol.

26, 1906 (1907), p. 55 (Bacon, Bulan, Philippines).

— Regan, Ann. Barbun Mus., vol. 2, 1917-20, p.

76 (Hatal).

Xaenus variegatus Duoy and Gaimard, Voy. Uranie,

Zool., 1824, p. 223, pl. 48, fig. 3. Mauritius;

Mani. — Weber and Beaufort, Fisher Indo

Austral. Archipelago, vol. 2, 1913, p. 149, fig.

56 (description of larva).

Synodus variegatus Seale, Occas. Papers Bishop

Mus., vol. 1, no. 3, 1900 (1901), p. 63 (Guam). —

Beaufort, Bijdr. Dierk. Amsterdam, v. 1,  
19, 1913, p. 101 (Harnet).

Swainson, + = 412

Laurida minuta Swainson, Nat. Hist.  
Animals, vol. 2, 1839, p. 288 (on Le Sueur).



Saurus synodus (not Linnaeus) Valenciennes,  
Hist. Nat. Poiss., vol. 22, 1849, p. 477 (part;  
New Guinea). — Thiollière, Fauna Woodlark,  
1857, p. 204 (Woodlark Island). — Bleeker,  
Act. Soc. Sci. Ind. Néerland., no. 2, vol. 6, 1859,  
pp. 3, 5 (Doreh, New Guinea).

Saurus cynodus Günther, Notes de Réunion,  
vol. 2, 1862, p. 27 (error).

Synodus lucius Schlegel, Fauna Japonica, Poiss.,  
pts. 10-14, 1846, p. 232, pl. 106, fig. 1, near Nagasaki.  
— Bleeker, Verhandel. Batavia. Genootsch. (Japan),  
vol. 25, 1853, p. 19.

Beaufort, Bijdr. Dierk. Amsterdam, vol.  
19, 1913, p. 101 (Harnet).

Saurus minutus Le Sueur, Journ. Acad. Nat.  
Sci. Philadelphia, vol. 5, 1825, p. 118, pl. 5.

Mauritius.

Saurus synodus (not Linnaeus) Valenciennes,  
Hist. Nat. Poiss., vol. 22, 1849, p. 477 (part;  
New Guinea). — Thiollière, Fauna Woodlark,  
1857, p. 204 (Woodlark Island). — Bleeker,  
Act. Soc. Sci. Ind. Néerland., no. 2, vol. 6, 1859,  
pp. 3, 5 (Doreh, New Guinea).

Saurus cynodus Guichenot, Notes Ile Réunion,  
vol. 2, 1862, p. 29 (error).

Synodus lucius Schlegel, Fauna Japonica, Poiss.,  
pts. 10-14, 1846, p. 232, pl. 106, fig. 1, near Nagasaki.  
— Bleeker, Verhandel. Batavia. Genootsch. (Japan),  
vol. 25, 1853, p. 19.



Synodus synodus Bleeker, Atlas Ichth.  
Ind. Néerland., vol. 6, 1866-72, p. 154,

pl. (11) 278, fig. 5 (Java, Bali, Cocos, Sumatra,  
Batu, Nias, Singapore, Celebes, Sungi, Ternate, Halmahera, Batjan,  
Verslagen Kon. Akad. Wet. Amsterdam,

series 2, vol. 7, 1873, p. 36 (Am Islands).

Saurus mormonirika (Montrouzier)

Thiollière, Fauna Woodlark, 1857, p.

204 (name in synonymy).

Saurus erythraeus Klunzinger, Verh.

Zool. bot. Gesell. Wien, vol. 21, 1871, p.

590. Koseir, Red Sea.

Synodus dermatogenys Fowler, Proc.

Acad. Nat. Sci. Philadelphia, 1911/1912,

p. 566, fig. 3, Hawaiian Islands.

(Lombok, Banda, Goram, New Guinea).

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Depth 6 to 8; head  $3\frac{1}{8}$  to  $3\frac{2}{3}$ ,  
width  $1\frac{3}{5}$  to  $2\frac{1}{8}$ . Snout 4 to 5 in  
head from upper jaw tip; eye  $5\frac{1}{5}$   
to  $8\frac{3}{4}$ ,  $1\frac{1}{4}$  to 2 in snout,  $1\frac{1}{3}$  <sup>to  $1\frac{2}{5}$</sup>  in  
interorbital; premaxillary reaches  
 $1\frac{1}{2}$  to  $1\frac{3}{5}$  eye diameters behind  
eye, length  $1\frac{1}{2}$  to  $1\frac{3}{5}$  in head  
from snout tip; interorbital  $5\frac{7}{8}$   
to  $8\frac{1}{2}$ , concave. Gill rakers numerous,  
minute, low spinules; gill filaments  
 $1\frac{4}{5}$  to 2 in eye.

Scales 55 to 60 in lateral  
line to caudal base and 3 or 4

more on latter; 5 or 6 above,  
 6 or 7 below, 19 to 22 predorsal,  
 7 to 10 rows on postocular and  
 hind portion for nearly half its  
 area sometimes naked. Ventral  
 axillary scale  $3\frac{1}{2}$  in fin. Scales  
 with 3 or 4 basal radiating striae,  
 edges scalloped; circuli very fine,  
 not extended apically.

D. III, 10, I or III, 11, I, first  
 branched ray. 2 to  $2\frac{2}{5}$  in total head  
 length; adipose fin  $6\frac{1}{2}$  to 7; A.  
III, 6, I or III, 7, I, first branched



ray  $2\frac{2}{3}$  to  $3\frac{1}{4}$ ; caudal  $1\frac{4}{5}$  to 2, forked; least depth of caudal peduncle  $6\frac{1}{5}$  to  $6\frac{1}{4}$ ; pectoral  $2\frac{1}{3}$  to  $2\frac{4}{5}$ ; ventral  $1\frac{1}{6}$  to  $1\frac{1}{4}$ .

Dusky olive above, below whitish. On back 7 dusky saddle like blotches with alternating paler ones. Head blotched with dusky and 2 dusky bands across jaws below. Iris neutral gray. Dorsal and caudal grayish, finely banded with dusky, other fins whitish.

Red Sea, Mauritius, Natal, East

India, Philippines, Japan,  
Queensland, Micronesia, Melanesia,  
Polynesia, Hawaii.

51031 U.S.N.M. Hawaiian Island.  
Bureau of Fisheries 03817.  
Length 250? mm.

51706 U.S.N.M. Hawaiian Islands.  
Albatross Station 746. Length 77 mm.

52457 U.S.N.M. Apia, Samoa.  
Bureau of Fisheries. Length 122 mm.

52671 U.S.N.M.  
Bureau of Fisheries 03174. Length 208 mm.

54776 U.S.N.M. Kochi, Japan.  
May 7, 1903. Dr. H. M. Smith. Length  
126 mm.

55272 U.S.N.M.

Length 113 to 131 mm. 3 examples.

55376 U.S.N.M. Laysan.  
Albatross Station . Length 124  
to 164 mm. 4 examples.

55425 U.S.N.M. Coconut Island,  
Hilo, Hawaiian Island. July 15, 1901.  
Bureau of Fisheries . Length  
46 mm.

55437 U.S.N.M.

Bureau of Fisheries.  
Length 209 to 225 mm. 3 examples.

56204 U.S.N.M.  
Bureau of Fisheries 3670.  
Length 182 mm.

58525 U.S.N.M.

Length 363 mm.

59777 U.S.N.M. Suzume, Urado,  
Japan. May 10, 1903. Dr. H. M. Smith.  
Length 130 mm.



59778 U.S.N.M. Yamagawa,  
Japan. June 16, 1903. Dr. H. M. Smith.  
Length 88 mm.

59805 U.S.N.M. Kochi, Japan.  
Dr. H. M. Smith. Length 302 mm.

64661 U.S.N.M. Nagasaki, Japan.  
D. S. Jordan and J. O. Snyder. Length  
235 to 255 mm. 3 examples.

74711 U.S.N.M. <sup>Naha</sup> Okinawa, Riu Kiu.  
Albatross Station 1906.  
Length 161 to 183 mm. 3 examples.

89740 U.S.N.M. Black Beach Anchorage,  
Charles Island, Galapagos. Pinchot  
Expedition. June 27, 1929. Length 55  
to 59 mm. 5 examples.

91826 U.S.N.M. Iukuhiva,  
Marquesas Islands. September 25, 1929.  
Pinchot Expedition. ~~September 25~~  
Length 23 to 38 mm. 17 examples.

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28130 A.N.S.P. Hawaiian Islands.  
Bureau of Fisheries.  
Length mm. Type of Synodus  
dermatogenys.

28131 to 28134 A.N.S.P. Hawaiian  
Islands. Bureau of Fisheries.  
Length 128 to 143 mm. Paratypes  
of Synodus dermatogenys.

A.N.S.P. Delagoa Bay,  
Portuguese East Africa.  
H. W. Bell Marley. Length 213 mm.

3042

Synodus synodus (Linnaeus)

Esox synodus Linnaeus, Syst. Nat., ed.  
10, vol. 1, 1758, p. 313. America; ed. 12,  
vol. 1,  
1766, p. 516 (copied). — Bonnaterre,

Tabl. Ichth., 1788, p. 174, pl. 72, fig.

295 (America). — Gmelin, Syst. Nat.

Linnaeus, vol. 1, 1789, p. 1390 (copied). —

Walbaum, Artedi Pisc., vol. 3, 1792, p.  
90 (compiled).

Synodus synodus Meuschen, Mus. Gronovius,  
1778, p. 35 (America). — Schneider,

Syst. Ichth. Bloch, 1801, p. 396 (America).

— Jordan and Evermann, Bull. U. S. Nat.

Mus., no. 47, pt. 1, 1896, p. 536 (compiled).  
Clark, Proc. Roy. Phys. Soc. Edinburgh, vol. 19,  
1913, p. 389, figs. 2-4 (St. Helena).



Saurus synodus Valenciennes, Hist.

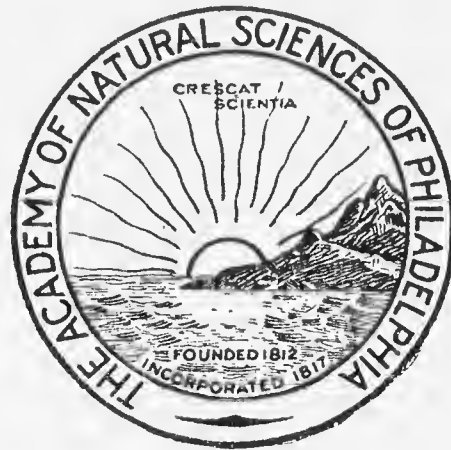
Nat. Poiss., 2, 1849, p. 477 (Martinique,  
Guadeloupe, Bahia, St. Helena).

Saurus (Synodus) synodus Metzelaar,  
Rapp. Kolonie Curaçoa, vol. 2, pt. 1,  
1919, p. 22 (Bonaire and St. Eustatius).

~~Depth  $4\frac{2}{5}$  to  $5\frac{3}{5}$ , head  $3\frac{1}{2}$  to  $3\frac{4}{5}$ .~~

— Clark, Scottish Nat. Antarctic Exped.,  
Rep. Sci. Res. "Scotia", vol. 4, Zool.,  
pt. 16, June 30, 1913, p. 389, figs. 2-4  
(St. Helena).

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Synodus gronovii Walbaum, Artedi  
Pisc., vol. 3, 1792, p. 655 (on Synodus  
Gronow, Mus. Ichth., vol. 2, 1765, no.  
155, pl. 7, fig. 1. America).

Synodus fasciatus Lacépède, Hist. nat.  
Pois., vol. 5, 1803, pp. 318, 321. North  
America.

Synodus gronovianus Swainson, Nat.  
Hist. Animals, vol. 2, 1839, p. 286 (on  
Gronow).

Saurus atlanticus Johnson, Proc. Zool.  
Soc. London, 1863, p. 41. Madeira. —  
Günther, Cat. Fishes Brit. Mus., vol. 5,  
1864, p. 395 (type; Madeira); Proc.  
Zool. Soc. London, 1869, p. 238 (Saint  
Helena). — Melliss, St. Helena, 1875,  
p. 110. — Metzelaar, Rapp. Kolonie Curaçoa,  
vol. 2, pt. 1, 1919, p. 214 (compiled).



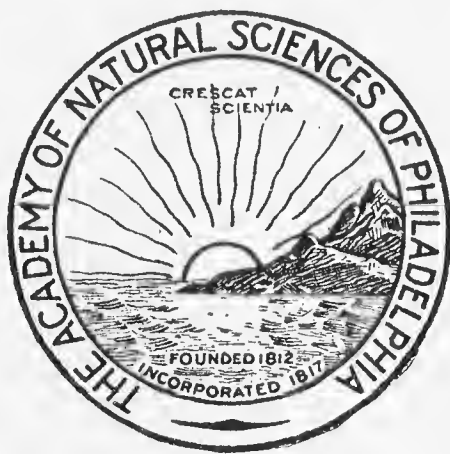
Synodus varius (not Lacépède) Günther,  
Cat. Fishes Brit. Mus., vol. 5, 1864,  
p. 395 (part).

Synodus intermedius (not Agassiz)  
Weeks, Proc. Acad. Nat. Sci. Philadelphia,  
1884, p. 132 (part).

Depth  $4\frac{2}{5}$  to  $5\frac{3}{5}$ ; head  $3\frac{1}{2}$  to  $3\frac{4}{5}$ .  
Snout  $4\frac{1}{5}$  to  $4\frac{1}{3}$  in head; eye  
 $5\frac{4}{5}$  to  $6\frac{3}{5}$ ,  $1\frac{1}{2}$  to  $1\frac{3}{4}$  in snout;  
premaxillary extends about  $1\frac{1}{2}$  to  
 $1\frac{2}{3}$  eye diameters behind eye,  
length  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in head;  
interorbital  $7\frac{1}{2}$  to  $8\frac{1}{2}$ . Gill rakers  
reduced to rows of minute teeth.

Scales 60 to 62 in lateral line;  
5 above.

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D. 14 or 15, fin height  $1\frac{4}{5}$  in head; adipose fin 6 to 7.; A. 9 or 10, fin height  $2\frac{1}{5}$  to  $2\frac{1}{2}$ ; caudal  $1\frac{2}{3}$  to  $1\frac{3}{4}$ , forked; least depth of caudal peduncle 4 to  $4\frac{1}{3}$ ; pectoral 2; ventral  $1\frac{1}{8}$  to  $1\frac{1}{5}$ .

Body and fins speckled dark gray on silvery gray background. Black spot on shoulder and snout tip. Several indistinct and irregular cross bars on body. Length 274 mm. (Clark.)



Synodus lacertinus Gilbert

Synodus lacertinus Gilbert, Proc. U. S.  
Nat. Mus., vol. 13, 1890, p. 55. Acapulco,

Mexico. — Jordan and Evermann, Bull.

U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 536

(compiled). — Meek and Hildebrand,

Field Mus. Nat. Hist. Publ. no. 215, Zool.  
Series, vol. 15, Dec. 20, 1923, p. 220 (type;  
Acapulco).

Depth  $5\frac{1}{3}$  to  $7\frac{1}{4}$ ; head  $3\frac{3}{4}$  to  $3\frac{7}{8}$ ,  
width  $1\frac{4}{5}$  to  $1\frac{7}{8}$ . Snout  $4\frac{1}{4}$  to  $4\frac{3}{4}$  in  
head; eye  $5\frac{4}{5}$  to 7,  $1\frac{1}{3}$  to  $1\frac{4}{5}$  in snout,  
subequal with interorbital, bony  
interorbital  $\frac{3}{4}$  to  $\frac{4}{5}$  eye; premaxillary  
reaches  $1\frac{1}{2}$  to  $1\frac{3}{4}$  eye diameters behind  
eye, length  $1\frac{1}{2}$  to  $1\frac{2}{3}$  in head.

Gill rakers as very minute numerous spinules; gill filaments  $1\frac{2}{5}$  in eye.

Scales 59 to 61 in lateral line to caudal base and 3 or 4 more on latter; 5 above, 6 below, 19 or 20 predorsal, 6 on postocular to hind preopercle ridge. Pectoral axillary scale  $2\frac{2}{3}$  in fin, ventral axillary scale  $3\frac{2}{3}$  in fin. Scales with 4 basal radiating striae, edge scalloped; circuli very fine, not continued apically.

D. II, 10, I or II, 11, I, first branched ray  $1\frac{7}{8}$  to 2 in head; adipose fin

$6\frac{1}{4}$  to  $6\frac{1}{3}$ ;  $A. \underline{I}, 8, \underline{I}$ , longest anterior ray 3 to  $3\frac{1}{4}$ ; caudal  $1\frac{2}{5}$  to  $1\frac{1}{2}$ ?, well forked; least depth of caudal peduncle  $4\frac{2}{5}$  to  $4\frac{3}{5}$ ; pectoral  $2\frac{1}{10}$  to  $2\frac{1}{3}$ ; ventral 1 to  $1\frac{1}{5}$ .

Back and head above brown, mottled with darker. Back with 5 transverse darker bands and paler one in each interval. Mandible with 5 brown transverse bands, third widest. Lower surfaces of head and body whitish. Dorsal and caudal with transverse darker spots, other fins whitish.



West coast of Mexico,

44300 U.S.N.M., Acapulco, Mexico.

Albatross Station.

Length 148 mm. Type.

1 example U.S.N.M. Panama. Capt.

J. M. Dow. Length mm.

Synodus foetens (Linnaeus)

Salmo foetens Linnaeus, Syst. nat., ed. 12, vol. 1, 1766, p. 513. In Carolina. —

Forster, Cat. Anim. North America, 1771, p. 22 (on Catesby). — Bonnaterre, Tabl.

Ichth., 1788, p. 165, pl. 70, fig. 285

(Carolina). — Schoepf, Beob. Berlin, vol.

2, 1788, p. 176 (Charleston). — Gmelin,

Syst. nat. Linnaeus, vol. 1, 1788, p. 1385.

— Bloch, Naturg. Ausland. Fische,

vol. 8, 1794, p. 118, pl. 384, fig. 2 (Carolina).

— Walbaum, Artedi Pisc., vol. 3, 1792,

p. 82 (copied). — Schneider, Syst. Ichth.

Bloch, 1801, p. 404 (Carolina; Havana).

Saurus foetens Valenciennes, Hist. nat. Poiss., vol. 22, 1849, p. 471 (Martinique, San Domingo, Bahia, Rio Janeiro, Cape Horn, Payta). — Holbrook, Ichth. South Carolina, 1860, p. 187. — Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 396 (New Orleans).

Synodus foetens Gill, Rep. U. S. Fish Comm., <sup>pt. 1,</sup> 1871-72, p. 810 (reference). — Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. , 1878, p. 384 (Beaufort, N. C.). — Goode and Bean, Proc. U. S. Nat. Mus., vol. , 1879, p. 342 (Key West). — Bean, Proc. U. S. Nat. Mus., vol. , 1880, p. 105 (Beaufort); vol. , 1882, p. 239 (Gulf of Mexico). —



Jordan and Gilbert, Proc. U. S. Nat.

Mus., vol. , 1882, p. 585 (Charleston);

Bull. U. S. Nat. Mus., no. 16, 1882, p. 280

(compiled). — Week, Proc. Acad. Nat.

Sci. Philadelphia, 1884, p. 135 (compiled).

— Jordan and Evermann, Bull. U. S. Nat.

Mus., no. 47, pt. 1, 1896, p. 538 (compiled);  
pt. 4, 1900, pl. 88, fig. 538.

— Fowler, Proc. Acad. Nat. Sci. Philadelphia,

1905 (March), p. 87 (Margueras Keys, Fla.);

1911 (1912), p. 563 (Longport, <sup>Beesley's Point, Atlantic City.</sup> and Corson's

Inlet, N. J.; Ft. Macon, N. C.; South Carolina;

Bayport and Margueras Keys, Fla.); 1915,

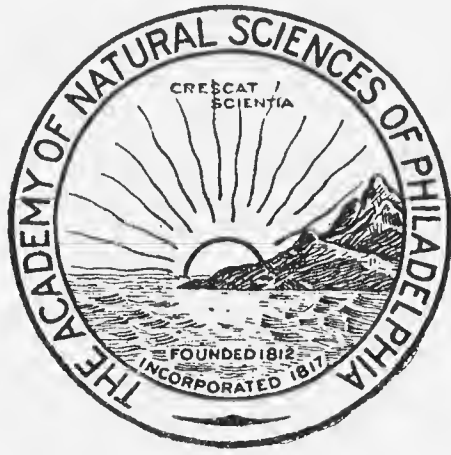
p. 529 (Trinidad); <sup>1919, p. 146 (Lucea, Jamaica);</sup> Proc. Biolog. Soc.

Washington, vol. 33, Dec. 30, 1920, p. 149 (New Jersey).

— Week and Hildebrand, Field Mus. Nat. Hist. Publ. no. 215, Zool.  
Ser. vol. 15, pt. 1, Dec. 20, 1923, p. 220 (Fox Bay, Colon, Mindi Cut).

— Breder, Bull. Bingham Oceanogr.  
Collection, vol. 1, art. 1, Oct. 19.  
1927, p. 13 (Sandy Hook Bay, N. J.;  
Green Cay, St. Francis on Isle of  
Pines, north of Glover reef).

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Asmerus albidus Lacépède, Hist. nat.

Poiss., vol. 5, 1803, pp. 228, 235. Carolina.

Coregonus ruber Lacépède, Hist. nat. Poiss.,  
vol. 5, 1803, pp. 243, 263, pl. 4, fig. 3.

American coasts (on Plumier).

Esox salmoneus Mitchill, Trans. Lit.

Philos. Soc. New York, vol. 1, 1815, p. 442.  
New York Bay.

Saurus longirostris (Spix) Ayassiz, Pisc.

Brasil. Spix, 1829, p. 80, pl. 43. Brazil.

Saurus mexicanus Cuvier, Règne Animal,

ed. 2, vol. 2, 1829, p. 314. Lake of Mexico.

Saurus spixianus Poey, Mem. Hist. nat. Cuba,  
vol. 2, 1860, p. 304. Cuba.

Synodus spixianus Poey, Synop. Pisc. Cuba,  
1868, p. 413 (Cuba); Enumeratio Pisc. Cuba, 1875,  
p. 397 (Cuba). — Meek, Proc. Acad. Nat. Sci.  
Philadelphia, 1884, p. 134 (Havana, Key West).

Depth  $5\frac{4}{5}$  to 9; head  $3\frac{2}{5}$  to  $4\frac{3}{5}$ , width  $1\frac{7}{8}$  to 2. Snout  $3\frac{1}{4}$  to  $3\frac{7}{8}$  in head; eye  $4\frac{1}{2}$  to  $7\frac{1}{2}$ , 2 in snout,  $1\frac{1}{2}$  in interorbital; premaxillary reaches  $1\frac{3}{5}$  eye diameters behind eye, length  $1\frac{1}{4}$  to  $1\frac{2}{3}$  in head; interorbital  $4\frac{2}{5}$  to 6, concave. Gill rakers as minute numerous spinules; gill filaments equal eye.

Scales 56 to 60 in lateral line to caudal base and 4 to 6 more on latter; 5 or 6 above, 6 or 7 below, 22 to 30 predorsal, 6 or 7 rows on

postocular to preopercle ridge.

Axillary pectoral scale  $3\frac{1}{3}$  in fin,  
ventral axillary scale 3 in fin.

Scales with 3 basal radiating striae;  
circuli fine, not extended apically.

D. II, 8, I to II, 11, I, first branched  
ray  $1\frac{3}{5}$  to  $1\frac{2}{3}$  in head; adipose fin  
 $4\frac{1}{2}$  to  $6\frac{1}{2}$ ; A. II, 9, I to II, 11, I, first  
branched ray  $2\frac{4}{5}$  to  $3\frac{1}{6}$ ; caudal  $1\frac{2}{5}$   
to  $1\frac{1}{2}$ , well forked; least depth of  
caudal peduncle  $4\frac{4}{5}$  to 5; pectoral  $1\frac{7}{8}$   
to  $1\frac{9}{10}$ ; ventral  $1\frac{1}{8}$  to  $1\frac{1}{3}$ .

Back brown, finely mottled with



paler, under surfaces whitish.  
Iris silver white. Fins brownish,  
lower ones paler.

Massachusetts to Florida, Gulf  
of Mexico, West Indies, Bermuda,  
Caribbean Sea, Trinidad, Brazil.

3059

2719 U.S.N.M. Beesley's Point, New Jersey. Prof. S. F. Baird. Length 110 mm.

6004 U.S.N.M. Jamaica. Length 328 mm.

15279 U.S.N.M. Long Island. Bureau of Fisheries 1527. Length 66 or 67 mm. 2 examples.

16831 U.S.N.M. Central Aquarium. Length 250 mm.

19692 U.S.N.M. Fort Macon, North Carolina. Dr. H. C. Yarrow. Length 168 mm.

22684 U.S.N.M. Wood's Holl, Massachusetts. V. N. Edwards. Length 48 mm.

23553 U.S.N.M. Key West, Florida. J. W. Velie. Length 78 mm.

23752 U.S.N.M. Rappahannock River mouth, Virginia. J. B. Ferguson. Length 114 to 155 mm. 4 examples.

23813 U.S.N.M. Bermuda. Dr. G. B. Goode. Length 257 to 270 mm. 2 examples.

26421 U.S.N.M. Far Rockaway,  
Long Island. A.H. Lawrence. Length  
150? mm. Very poorly preserved.

25998 U.S.N.M. Charleston, South  
Carolina. C.C. Leslie. Length 260 mm.

26566 U.S.N.M. Pensacola, Florida.  
Silas Stearns. Length 190 mm.

26613 U.S.N.M. Cedar Keys, Florida.  
Silas Stearns. Length 75 mm.

30778 U.S.N.M. Pensacola, Florida.  
Silas Stearns. Length 225 mm. Very poor.

32076 U.S.N.M. Jamaica. Institute  
of Jamaica. Length 234 mm.

34470 U.S.N.M. Locality? Length 250 mm.

35098 U.S.N.M. Key West, Florida.  
Dr. D.S. Jordan. Length 150 mm. Ex  
Synodus spixianus.



3061

35952 U.S.N.M. Great Beach,  
Long Island. Bureau of Fisheries.  
Length 168 mm.

36008 U.S.N.M. Oak Island Beach,  
Long Island. Length 105 mm.

36824 U.S.N.M. Annapolis, Maryland.  
J. Hawkins. Length 247 mm.

38195 U.S.N.M. N.  $36^{\circ}35'$  W.  $74^{\circ}3'30''$ .  
In 1239 fathoms. Albatross Station  
Length 45 mm. Postlarval.

38538 U.S.N.M. Jamaica.  
Length 245 mm.

38710 U.S.N.M. Key West, Florida.  
Length 342 mm.

39158 U.S.N.M. Cananvie Bay, New  
York. September 1887. T. R. Hicks.  
Length 180 mm.

3062

42479 U.S.N.M. Cape Charles, Virginia.  
B.A. Bean. Length 120 mm.

43301 U.S.N.M. Bahia, Brazil.  
Albatross Station. Length 200 mm.

46303 U.S.N.M. Galveston, Texas.  
December 14 - 15, 1891. Dr. B.W. Evermann.  
Length 165 mm.

49276 U.S.N.M. Pine Island Sound,  
Florida. Dr. M.G. Miller. Length 320  
mm.

51861 U.S.N.M. Horse Shoe Shoal,  
Beaufort, North Carolina. June 17, 1904.  
Length 51 to 78 mm.  
2 examples.

51916 U.S.N.M. Beaufort, North Carolina.  
E.W. Gudgeon and B.A. Bean. Length 140  
to 148 mm. 2 examples.

58933 U.S.N.M. Wood's Holl, Massachusetts.  
1897.  
Length 123 or 124 mm. 2 examples.

3063

61444 U.S.N.M. Beaufort, North  
Carolina. Bureau of Fisheries.  
Length 230 to 260 mm. 3 examples.

67756 U.S.N.M. St. George's Island,  
Maryland. August 16, 1897. M.C. Marsh.  
Length 125 to 158 mm. 2 examples.  
~~677~~

67757 U.S.N.M. St. George's Island,  
Maryland. September 15, 1897.  
A. Marmaduke. Length 130 to 143 mm.  
2 examples.

67763 U.S.N.M. Cape Charles City, Virginia.  
November 1, 1897? Length 78 mm.

68517 U.S.N.M. Tarpon Springs,  
Florida. November 7, 1896. Length  
39 to 55 mm. 5 examples.

73027 U.S.N.M. Pepperfish Key.  
Fish Hawk Station 7145. Length 97 mm.

73028 U.S.N.M. Ancilla, Florida.  
Fish Hawk Station 7148. Length 65 mm.

79620 U.S.N.M. Fox Bay, Colon, Panama.  
March 31, 1911. S.E. Meek and V.F. Hildebrand.  
Length 57 to 92 mm. 3 examples.



3064

79621 U.S.N.M. Fox Bay, Colon, Panama.  
March 25, 1911. S.E. Meek and S.F. Hildebrand.  
Length 120 mm.

79625 U.S.N.M. Fox Bay, Colon, Panama.  
January 11, 1911. S.E. Meek and S.F. Hildebrand.  
Length 81 to 184 mm. 7 examples.

79626 U.S.N.M. Fox Bay, Colon, Panama.  
January 5, 1911. S.E. Meek and S.F. Hildebrand.  
Length 129 mm.

79627 U.S.N.M. Minde Cut, Panama.  
February 3-4, 1911. S.E. Meek and S.F.  
Hildebrand. Length 198 mm.

79628 and 79629 U.S.N.M. Fox Bay,  
Colon, Panama. January 22, 1912. S.E. Meek  
and S.F. Hildebrand. Length 136 to 138 mm.  
2 examples.

79630 U.S.N.M. Colon market, Panama.  
February 4, 1912. S.E. Meek and S.F.  
Hildebrand. Length 303 mm.

83857 U.S.N.M. Key West, Florida.  
Albatross Station J. 1884.  
Length 33 to 42 mm. 20 examples,  
postlarval.

83945 U.S.N.M.  
Albatross Station 2607.  
Length 39 to 41 mm. 2 examples, postlarval.

~~85704 U.S.N.M. D. D. West~~  
Branch, Massachusetts. September 7, 1892.  
Length 75 to 178 mm. 2 examples.

92032 U.S.N.M. Potomac River.  
J.E. Benedict. Length 233 mm.

1 example U.S.N.M. Providence, Rhode  
Island. J.B. Ferguson. Length 182 mm.

1 example U.S.N.M. Wood's Holl, Mass.  
August 13, 1885. Length 42 mm.  
Postlarval.



# Alepocephalidae

Alepocephalinae. V. origin median  
in body without caudal, or nearly  
so. Snout short or moderate.

(Alepocephalus, Haliasturiscops,  
Xenognathus, Leptochilichthys,  
Anguilliscops, Bathytroctes,  
Narcetes, Platytroctes,  
Platytroctes, Houlihan,  
Xenoderma, Leptoderma,  
Anomalopterus).

## Alepocephalus Risso

→ W. macyides a subgenus -  
Subgenus Alepocephalus Risso

Alepocephalus andersoni n. sp.

Aulastomatomorphinae Snout  
long, tube like, with small terminal  
mouth; so minute, scarcely imbricate  
V. origin median in body without caudal  
(Aulastomatomorphinae)

Dolicopteryginae V. origin well  
postmedian; eyes telescopic; P. very  
long. (Dolicopteryx)



<sup>Intervi</sup>  
Synodontidae

Harpadon Le Sueur

Peltaharpadon n. subg.

Luididae

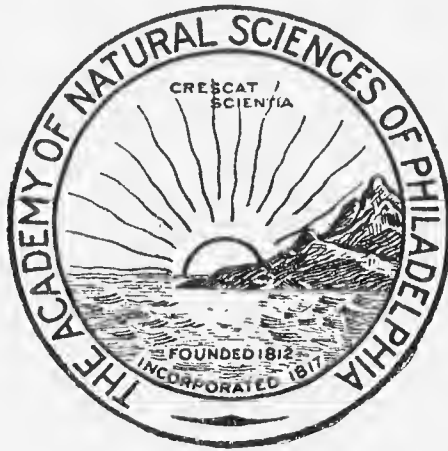
Paralepis philippinus n. sp.

3066

Synodus scituliceps Jordan and Gilbert

Synodus scituliceps Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. 4, 1881, p. 344. Mazatlan; vol. 5, 1882, p. 354 (Cape San Lucas); Bull. U. S. Fish Comm., vol. , 1882 ( ), pp. 106, 109 (Panama). — Meek, Proc. Acad. Nat. Sci. Philadelphia, 1884, p. 135 (compiled). — Jordan, Starks, Culver, Williams, Stanford Pulicat. Hopkins Lab., no. 1, 1895, p. 411 (Mazatlan). — Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 537 (compiled). — Gilbert and Starks, Mem. California Acad. Sci., vol. 4, 1904, p. 50 (Panama Bay). — Meek and Hildebrand, Field Mus. Nat. Hist. Publ., no. 215, zool. Ser. vol. 15, pt. 1, Dec. 20, 1923, p. 221 (Chame Point, Tobago Island, Balboa, Panama).

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SECRETARY

LOGAN SQUARE  
PHILADELPHIA, PA.



<sup>3057</sup>  
~~Synodus jenkinsi~~ Jordan and Bollman  
Synodus jenkinsi Jordan and Bollman,  
Proc. U. S. Nat. Mus., vol. 12, 1889, p. 153.

N.  $8^{\circ}6'30''$  W.  $78^{\circ}51'$ ; N.  $8^{\circ}51'?$  W.  $79^{\circ}31'30''$ ;

Guaymas. — Jordan and Evermann, Bull.  
U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 537

(compiled).

Depth  $6\frac{1}{8}$  to  $7\frac{3}{4}$ ; head  $3\frac{2}{3}$  to 4,  
width  $1\frac{3}{4}$  to 2. Snout  $3\frac{1}{4}$  to  $3\frac{1}{3}$  in  
head; eye 6 to  $7\frac{2}{3}$ ,  $1\frac{7}{8}$  to  $2\frac{1}{5}$  in snout,  
 $1\frac{1}{2}$  to  $1\frac{7}{8}$  in interorbital; premaxillary  
reaches  $\frac{3}{4}$  to  $1\frac{1}{3}$  eye diameters behind  
eye, length  $1\frac{3}{5}$  to  $1\frac{2}{3}$  in head;  
interorbital  $4\frac{1}{3}$  to  $4\frac{4}{5}$ , slightly concave.  
Gill rakers as very minute numerous

Depth  $6\frac{1}{8}$  to  $7\frac{3}{4}$ ; head  $3\frac{2}{3}$  to  $4\frac{1}{8}$ ,  
width  $1\frac{3}{4}$  to  $2\frac{1}{2}$ . Snout  $3\frac{1}{4}$  to  $3\frac{2}{5}$   
in head; eye  $6\frac{3}{5}$  to  $7\frac{2}{3}$ ,  $1\frac{4}{5}$  to  $1\frac{7}{8}$  in  
snout,  $1\frac{1}{2}$  to  $1\frac{7}{8}$  in interorbital though  
much greater than bony interorbital;  
premaxillary extends  $\frac{3}{4}$  to  $1\frac{1}{3}$  eye  
diameters behind eye, length  $1\frac{3}{5}$  to  
 $1\frac{2}{3}$  in head; interorbital  $5\frac{4}{3}$  to 6,  
slightly concave. Gill rakers as  
numerous minute denticles; gill  
filaments  $1\frac{1}{2}$  in eye.

Scales ~~with~~ 54 to 59 in lateral  
line to caudal base and  $3$  or  $4$  more on

latter; 5 above, <sup>or 7</sup> 6<sub>1</sub> below, 21 to 24  
predorsal, 5<sub>1</sub> <sup>or 6</sup> postocular to hind  
preopercle ridge. Pectoral axillary  
scale  $2\frac{3}{4}$  to  $3\frac{1}{2}$  in fin, ventral  
axillary scale  $3\frac{1}{5}$  to  $3\frac{4}{3}$  in fin.

Scales with 3 basal radiating striae,  
edge scalloped; circuli very fine,  
not extended apically.

D. III, 9, I, first branched ray  
 $1\frac{1}{2}$  to  $1\frac{4}{5}$  in head; adipose fin 5 to  
 $6\frac{7}{8}$ ; A. I, 10, I, <sup>or III, II, I,</sup> second branched  
ray  $2\frac{7}{8}$  to 3; caudal  $1\frac{2}{5}$  <sup>to  $1\frac{2}{3}$</sup> , well  
forked; least depth of caudal peduncle



~~branched ray 3; caudal  $1\frac{3}{5}$  to  $1\frac{2}{3}$ ,  
~~deeply forked~~; least depth of  
 caudal peduncle  $4\frac{1}{2}$  to  $4\frac{4}{5}$ ; pectoral  
 $1\frac{2}{3}$  to  $2\frac{1}{8}$ ; ventral  $1\frac{1}{8}$  to  $1\frac{2}{5}$ .~~

Back brown, mottled slightly with darker, under surfaces whitish. Iris pale or silvery to gray. Dorsal, adipose fin and caudal brown, also pectoral terminally, other fins whitish.

Off Pacific coast of Mexico and Central America.

3071

41171 U.S.N.M. N.  $8^{\circ}51'$  W.  $79^{\circ}31'$

30". Albatross Station

Length 327 mm. Type.

41201 U.S.N.M. N.  $8^{\circ}44'$  W.  $79^{\circ}$ .

Albatross Station.

Length 272 mm.

41409 U.S.N.M. N.  $8^{\circ}6'$  W.  $78^{\circ}31'$ .

Albatross Station.

Length 255 mm.

3072

$4\frac{1}{2}$  to  $4\frac{3}{4}$ <sup>4/5</sup>; pectoral  $1\frac{2}{3}$  to  $2\frac{1}{8}$ <sub>8</sub>;  
ventral  $1\frac{1}{8}$  to  $1\frac{2}{5}$ <sup>2/5</sup>.

Back brown, sides and below  
whitish. Iris silvery white. Fins  
all pale brown.

Pacific coast of Central America  
and Mexico.

46483 U.S.N.M.  
Albatross Station 3024.  
Length 122 mm.

46504 U.S.N.M. Carmen Island.  
March 18, 1889. Albatross Station  
Length 178 mm.

46505 U.S.N.M.  
Albatross Station 3012.  
Length 100 to 108 mm. 3 examples.



46627 U.S.N.M. N.  $31^{\circ}22'$  W.  $114^{\circ}7'45''$ .  
In 17 fathoms. Albatross Station  
Length 183 mm.

46656 U.S.N.M.  
Albatross Station  
Length 85 mm.

46657 U.S.N.M. N.  $31^{\circ}21'15''$  W.  $113^{\circ}59'$ .  
In  $9\frac{1}{2}$  fathoms. Albatross Station  
Length 96 mm.

47485 U.S.N.M. Mazatlan, Mexico.  
Dr. D. S. Jordan. Length 162 mm.

54506 U.S.N.M.  
Albatross Station 2822.  
Length 176 mm.

79622 U.S.N.M. Tobago Island,  
Panama. May 12-15, 1911. V. E. Meek and  
S. F. Hildebrand. Length 47 to 127 mm.  
2 examples.

79623 U.S.N.M. Balboa, Panama.  
January 31, 1912. S.E. Meek and V.F.  
Hildebrand. Length 108 to 137 mm.  
7 examples.

79624 U.S.N.M. Naos Island, Panama.  
February 5, 1912. S.E. Meek and V.F.  
Hildebrand. Length 120 mm.

79631 U.S.N.M. Chame Point, Panama.  
S.E. Meek and V.F. Hildebrand. Length  
91 mm.

82020 U.S.N.M. Chame Point, Panama.  
Autumn 1912. Robert Tweddie. Length  
32 to 46 mm. 15 examples.

82072 U.S.N.M. Chame Point, Panama.  
August 1913. Robert Tweddie. Length 20  
to 49 mm. 55 examples.

3075

Synodus acutus Garman

Synodus acutus Garman, Mem.

Mus. Comp. Zool., vol. 24, 1899, p.  
252. N.  $7^{\circ}40'$  W.  $79^{\circ}17'50''$ , 127  
fathoms; N.  $7^{\circ}26'10''$  W.  $79^{\circ}53'50''$ ,  
56 fathoms, off Panama.

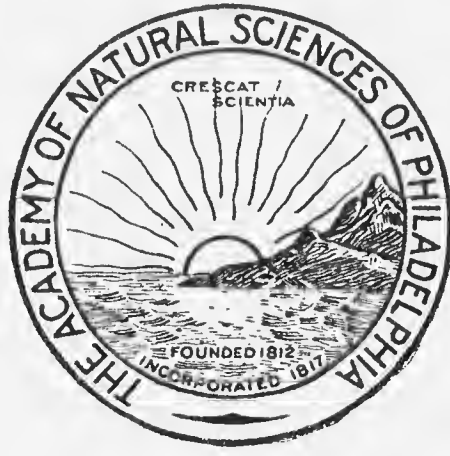
Head  $4\frac{1}{2}$  in total, narrowing  
forward, width 2. Snout 4 in  
head; eye 4, orbit cutting profile  
of crown; <sup>pre</sup>maxillary extends  $\frac{1}{2}$   
eye diameter behind eye; teeth  
small, slender, unequal, depressible,  
in narrow bands in jaws, palatines  
and at each side of middle of  
tongue; ~~interorbital~~ <sup>crown</sup> depressed, slightly  
concave, shallow groove on interorbital.

Scales 55 in lateral line; 5  
above, 6 below, 4 rows on cheek.

D. 11, third ray long as postocular,



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origin midway between snout and  
adipose fin; fin long as ventral;  
A. 11; pectoral less than ventral,  
 $2\frac{1}{2}$  in head.

Light grayish to grayish olive.  
Flanks below lateral line and sides  
of head yellowish to silvery. Belly silvery.  
Ten brown blotches on lateral line and  
half scale width lower second series of  
twice as many smaller and fainter. Faint  
indications of transverse bands on back,  
connecting with larger blotches in younger.  
Dorsal and caudal darker backward.  
Adipose fin with light edges. Anal  
and ventrals yellowish white.

Length not given.

(Garman.)

Gulf of Panama.

Genus Bathymicrops Hjort

Bathymicrops Hjort, The Depths of  
the Ocean, 1912, pp. 416, 686. Type

Bathymicrops regis Hjort, monotypic.



3077

Synodus lucioceph (Ayres)

Saurus lucioceph Ayres, Proc. Cal.

Acad. Sci., 1855, p. 66. San Francisco,

California. — Günther, Cat. Fishes Brit. Mus.,  
vol. 5, 1864, p. 397 (copied).

Synodus lucioceph Jordan and Gilbert,

Proc. U. S. Nat. Mus., vol. , 1880, p. 457

(San Francisco, Monterey Bay, Santa Barbara)

— Jordan and Joy, Proc. U. S. Nat. Mus.,  
vol. , 1881, p. 13 (same localities). —

Jordan and Gilbert, Proc. U. S. Nat. Mus.,  
vol. 1881, p. 42; Bull. U. S. Nat. Mus., no. 47,

pt. 1, 1882, 281 (compiled). — Weeks, Proc.

Acad. Nat. Sci. Philadelphia, 1884, p. 136

(compiled). — Jordan and Evermann, Bull. U.  
S. Nat. Mus., no. 47, pt. 1, 1896, p. 539 (compiled).

— Fowler, Proc. Acad. Nat. Sci. Philadelphia,  
1911 (1912), p. 564 (San Francisco and  
California?).

Depth  $8\frac{2}{5}$  to  $9\frac{1}{3}$ ; head  $3\frac{9}{10}$  to  $4\frac{1}{8}$ ,  
width  $2\frac{1}{8}$  to  $2\frac{2}{5}$ . Snout  $3\frac{1}{4}$  to  $3\frac{1}{2}$  in  
head; eye  $4\frac{1}{2}$  to  $6\frac{3}{4}$ ,  $1\frac{1}{4}$  to  $2\frac{1}{5}$  in  
snout,  $1\frac{1}{2}$  to 2 in interorbital;  
premaxillaries extend  $\frac{3}{4}$  to  $1\frac{1}{4}$  eye  
diameters behind eye, length  $1\frac{4}{3}$  to  
 $1\frac{4}{5}$  in head; interorbital 4 to  $4\frac{2}{5}$ ,  
broadly concave. Gill rakers numerous,  
minute, sharp, slender denticles,  
greatly less than gill filaments,  
which  $1\frac{1}{2}$  in eye.

Scales 64 to 66 in lateral line

1883, p. 177 (Port Jackson).

Xaurida exo Jordan and Herre, Proc. U.S.

Nat. Mus., vol. 32, 1907, p. 520, fig. 1, Wakanoura,

Kobe; Tsunaga. — Franz, <sup>Kön.</sup> Abhandl., Bayer.

Abad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 18

(Aburatsubo). — Mori, Journ. Pan Pacific

Research Inst., vol. 3, no. 3, July Sep. 1928,

p. 4 (Fusan).

Synodus japonica (not Hutton) Jordan

and Evermann, Proc. U.S. Nat. Mus., vol. 25,

1902, p. 329 (Wakanoura, Japan). — Jordan

and Seale, Bull. Bur. Fisher., vol. 26, 1906

(1907), p. 5 (Cavite).



to caudal base and 5 or 6 more on  
latter; 8 above, 9 or 10 below, 35 to  
38 predorsal, 8 rows on postocular  
<sup>hind</sup> to preopercle ridge. Ventral axillary  
scale 3 in fin. Scales with 3 or 4  
basal radiating striae, edge scalloped;  
circuli very fine, not extended apically.

D. II, 10, I, first branched ray  $1\frac{2}{3}$   
to 2 in total head length; adipose fin  
 $6\frac{2}{3}$  to  $7\frac{1}{4}$ ; A. II, 11, I or II, 12, I, first  
branched ray  $3\frac{1}{8}$  to  $3\frac{1}{5}$ ; caudal  $1\frac{1}{2}$   
to  $1\frac{3}{5}$ , forked; least depth of caudal  
peduncle  $4\frac{3}{4}$  to  $5\frac{1}{2}$ ; pectoral  $1\frac{2}{3}$

to  $1\frac{3}{4}$ ; ventral  $1\frac{2}{5}$  to  $1\frac{1}{2}$ .

Brownish above, obscurely mottled darker. Head brownish above, paler in front and lower surface still paler. Iris brassy or silvery.

Branchiostegal region pale yellowish. Abdomen pale or dull buff to whitish. Dorsal and caudal uniform dull brown, latter little deeper along hind edge. Pectoral pale brown, deeper terminally. Ventral pale yellowish.

California.

26881 U.S.N.M. California. Dr. D. 3081

H. Jordan. Length 275 to 353 mm.

5 examples.

22247 U.S.N.M. Monterey, California.  
Dr. Canfield. Length 233 to 278 mm. 3 examples.

41870 U.S.N.M. San Diego, California.  
Dr. C. H. Eigenmann. Length 252 mm.

42413 U.S.N.M. Pacific coast of North America.  
Length 145 to 319 mm. 2 examples.

75602 U.S.N.M.  
Albatross Station 4304. Length 158 mm.

A.N.S.P. San Francisco, California.  
Bureau of Fisheries 27182. Length 143 mm.

A.N.S.P. Probably California?  
W. H. Lockington? Length 1380 mm.



3082

Synodus saurus (Linnaeus)  
Salmo saurus Linnaeus, Syst. Nat.,  
ed. 10, vol. 1, 1758, p. 310. Europe; ed.  
12, vol. 1, 1766, p. 511 (copied). — Bonnaterre,  
Tabl. Ichth., 1788, p. 165 (Mediterranean).  
— Gmelin, Syst. Nat. Linnaeus, vol. 1,  
1789, p. 1376 (copied). — Walbaum, Arted.  
Pisc., vol. 3, 1792, p. 57 (on Linnaeus). —  
Bloch, Naturg. Ausland. Fische, vol. 8,  
1794, p. 115, pl. 384, fig. 1 (Antilles,  
Red Sea, Mediterranean). — Schneider,  
Syst. Ichth. Bloch, 1801, p. 404  
(Europe).

Isomerus saurus Forsk., Descript. Animal.,  
1775, p. xix. (Malta). ~~No figure or description~~  
— Lacépède Hist. Nat. Poiss., vol. 5, 1803, p. 235  
(compiled).

Synodus saurus Meek, Proc. Acad.  
Nat. Sci. Philadelphia, 1884, p. 135

(compiled); — Jordan and Evermann,

Bull. U. S. Nat. Mus., no. 47, pt. 1,

1896, p. 537 (compiled). — Jordan and

Gunn, Proc. Acad. Nat. Sci. Philadelphia,

1898, p. 340 (Canary Islands). — Fowler,

(— Goode and Bean, Oceanic Ichth., 1895,  
p. 57 (compiled)).

Proc. Acad. Nat. Sci. Philadelphia,  
1911 (1912), p. 563 (Italy).

Saurus saurus Roule, Rés. Camp.  
Sci. Monaco, vol. 52, 1919, p. 33

(Villafranca, Azores, 20 meters).

— Vaillant, Rés. Camp. Sci.

Monaco, vol. 52, 1919, p. 130 (Povocão,  
Azores, 10 meters).

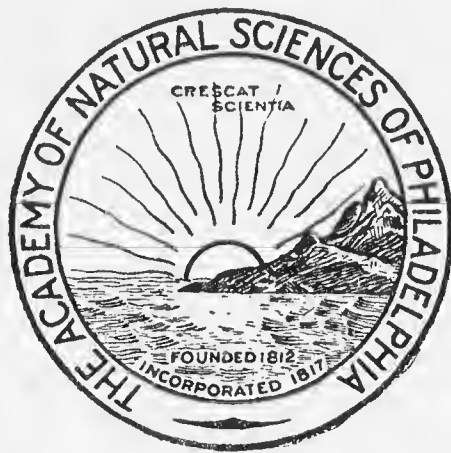
Saurus (Synodus) saurus Metzelaar,  
Rapp. Kolonië Curaçoa, vol. 2, pt. 1,  
1919, p. 22 (Saba, Well Bay 1 1/8 to 8  
fathoms).

Trus marmoratus Rafinesque, Car.  
Nov. Animal. Sicilia, 1810, p. 56,  
pl. 1, fig. 3. Sicily.

Alepisomaris risso Risso, Hist. Nat.  
Eur. Mérid., vol. 3, 1826, p. 458.



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Laurida mediterranea Swainson, Nat.  
Hist. Animals, vol. 1, 1838, pp. 242, 246,  
fig. 48. Mediterranean; vol. 2, 1839, p.  
288 (reference).

✓ Saurus griseus Low, Trans. Zool. Soc.  
London, vol. 2, pt. 3, 1837 (1841), p. 188.  
Madeira. — Günther, Cat. Fishes Brit.  
Mus., vol. 5, 1864, p. 394 (Madeira, St.  
Vincent, haples, mediterranean). —

Steindachner, Sitzb. Ber. Akad. Wiss.  
Wien, math.-naturw. Klasse, vol. 57, pt. 1,  
1868, p. 728, pl. 6, fig. 2 (Teneriffe). —

Vinciguerra, Ann. Mus. Civico Stor. Nat.  
Genova, vol. 18, 1882 (1883), p. 619 (Santa  
Cruz de Teneriffa, Madeira); Atti

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Soc. Ital. Sci. Nat., vol. 34, 1892, p. 329  
(Grand Canary). — Metzelaar, Rapp.  
Kolonië Curaçoa, vol. 2, pt. 1, 1919, p. 213 (compiled).

Saurus trivirgatus Valenciennes, Hist. Nat.  
Canaries, Poiss., vol. 2, pt. 2, 1836-44, p.  
72, pl. 15, fig. 1. Canary Islands. —  
Steindachner, Sitzb. Ber. Akad. Wiss.  
Wien, math.-naturw. Klasse, vol. 51, pt. 1,  
1865, p. 403 (Santa Cruz, Teneriffe).  
(not Risso) Bonaparte, Nat. Hist. Pers. Eur., 1846, p. 35 (Mediterranean).  
Saurus lacerta Valenciennes, Hist. Nat. Poiss.,  
vol. 22, 1849, p. 463 (Toulon, Corsica, Ivica,  
Naples, Messina, Athens).  
Synodus lacerta Goode, Bull. U. S. Nat. Mus., no. , 1876,  
p. 68 (Bermuda).



Depth  $6\frac{2}{3}$  to  $8\frac{1}{8}$ ; head 4 to  $4\frac{1}{4}$ , width  $1\frac{7}{8}$  to 2. Snout 4 to 5 in head, eye  $5\frac{3}{4}$  to  $6\frac{1}{2}$ ,  $1\frac{3}{5}$  in snout,  $1\frac{4}{5}$  in interorbital; premaxillary extends 1 to 2 eye diameters behind eye, length  $1\frac{2}{5}$  to  $1\frac{3}{4}$  in head; interorbital  $4\frac{1}{2}$  to 5, concave. Gill rakers small low clusters of spinules, greatly shorter than gill filaments, which  $1\frac{1}{3}$  in eye.

Scales 57 to 66 in lateral line to caudal base and 3 to 5 more on latter; 3 or 4 above, 5 or 6 below, 19 to 21 predorsal, 4 or 5 rows on

postocular to hind preopercle ridge.  
Ventral axillary scale 3 to  $3\frac{3}{5}$  in  
fin. Scales with 3 basal radiating  
striae, edge scalloped; circuli very  
fine, not extended apically.

D. II, 10, I, first branched ray  $1\frac{3}{5}$   
to  $1\frac{4}{5}$  in head; adipose fin  $4\frac{3}{4}$  to  $6\frac{2}{3}$ ;  
A. II, 8, I to II, 10, I, third ray  $2\frac{3}{5}$  to  $3\frac{4}{5}$ ;  
caudal  $1\frac{2}{5}$  to  $1\frac{3}{5}$ , forked; least depth  
of caudal peduncle  $4\frac{1}{5}$  to 5; pectoral  
 $2\frac{1}{5}$  to  $2\frac{2}{7}$ ; ventral 1 to  $1\frac{1}{10}$ .

Pale brownish, still paler or  
whitish below. Back down over sides

to lateral line mottled finely  
with deeper brown reticulations  
and wavy lines formed around or  
over inconspicuous narrow pale  
longitudinal bands, indistinct,  
broken and mostly ill defined, though  
one above lateral line most distinct.  
Head above all mottled with deep  
brownish lines. Iris silvered. Fins  
pale plain brownish white.

Azores, Canaries, Mediterranean.



12627 U.S.N.M.

British Museum. Length 220 mm.

28424 U.S.N.M. Italy. Italian  
Commission. Length 234 mm.

45024 U.S.N.M. Greece.  
Length 250 mm.

48330 U.S.N.M. Bay of Naples, Italy.  
S.E. Meek. Length 265 mm.

48331 U.S.N.M. Bay of Naples.  
S.E. Meek. Length 112 mm.

to A.N.S.P. Italy.  
C.L. Bonaparte 80. Dr. J.B. Wilson.  
Length 184 to 259 mm.

~~Trachincephalus~~

3091

~~Synodus~~ altipinnis (Günther)

Saurus altipinnis Günther, Cat. Fishes Brit.

→ Mus., vol. 5, 1864, p. 397. Pl. ...

↑ Synodus altipinnis Bleeker, Nederl. Tijdschr. Dierk., vol. 4, 1873, p. 147 (reference)

pointed, rather broader than long;  
eye equals interorbital, slightly  
concave; each frontal with fine,  
inconspicuous radiating striae.

Scales 59 in lateral line, <sup>5 above, 7 below;</sup>  
no keel on scales of tail; 21  
predorsal scales to occiput.

D. 11, higher than long; <sup>A. 17,</sup> front  
rays longer than posterior; ~~rays~~  
pectoral reaches eleventh scale  
of lateral line, rays 13; ventral  
reaches thirteenth or fourteenth  
of median series of scales  
beginning behind its base, ~~length~~  
rays 8.

~~Trachinocephalus~~

3091

~~Synodus~~ altipinnis (Günther)

Saurus altipinnis Günther, Cat. Fishes Brit.

→ Mus., vol. 5, 1864, p. 397. China.

Trachinocephalus altipinnis Chu, Biol. Bull. St. John's University, No. 1, January 1931, p. 83 (reference).

9-5  
9-5  
9-5/6  
Depth 7; head  $4\frac{1}{3}$ . Snout depressed, pointed, rather broader than long; eye equals interorbital, slightly concave; each frontal with fine, inconspicuous radiating striae.

Scales 59 in lateral line, <sup>5 above, 7 below;</sup>  
no keel on scales of tail; 21 predorsal scales to occiput.

D. 11, higher than long; <sup>A. 12,</sup> front rays longer than posterior; ~~rays~~ pectoral reaches eleventh scale of lateral line, rays 13; ventral reaches thirteenth or fourteenth of median series of scales beginning behind its base, ~~length~~ rays 8.



9/146. (17. 162  
 29, 21) 9/16/6  
 5.5  
 5.5  
 5.5

→ Michigan  
Traverse  
University  
Al  
for

Silvery band along side of  
body and tail, below lateral  
line and broad as a scale.

Length 255 mm. (Günther.)

China. Imperfectly described,  
perhaps it may belong in Trachinocephalus.

Genus Vaurida Valenciennes

Vaurida Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 499. Type Valmo tumbil Bloch, designated by Jordan, Snyder and Tanaka, Journ. College Sci. Tokyo, vol. 32, art. 1, 1913, p. 53.

Body elongate, subcylindrical, tail tapering. Head oblong, depressed, rather small. Snout short, pointed. Eye small or moderate, with adipose lids. Mouth cleft very wide, bordered above by very long styliform premaxillary, to which thin long maxillary closely adherent. Teeth in jaws unequal, pointed, depressible, more or less curved, in several irregular rows. Two



similar bands on each palatine,  
with inner band shorter and  
outer with 1 or 2 rows. Numerous  
fine teeth on tongue and gill arches.  
Gill membranes free. Pseudobranchia  
well developed. Branchiostegals 13 to 16.

Dorsal short, origin premedian.

Adipose fin small. Anal postmedian,  
short. Caudal forked. Pectoral inserted  
above middle of height, rather short.

Ventral with inner rays much longer  
than outer and inserted before  
dorsal.

I have been unable to consult  
the account of Saurida filamentosa  
'Ogilby' as quoted by McCulloch.

New Fish: Queensland Coast, Dec. 20,  
1910, p. 88. Off Cape Moreton, 73  
fathoms (Endeavour).

Analysis of species

a.' Scales larger, 45 to 58.

b.' Pectoral less than postorbital;  
scales more than 50; D. 10 to 12.

c.' Pectoral  $1\frac{4}{5}$  to  $1\frac{3}{4}$ .

d.' Indo Pacific form. argyrophanes.

d.<sup>2</sup> Atlantic form caribbaeus.

c.<sup>2</sup> Pectoral  $1\frac{4}{5}$  to  $1\frac{7}{8}$ .

e.' Pectoral not reaching ventral  
origin. argenteus.

e.<sup>2</sup> Pectoral reaches opposite ventral  
or little farther. gracilis.

c.<sup>3</sup> Pectoral  $1\frac{9}{10}$  to  $2\frac{1}{10}$  in head. tumbil.

b.<sup>2</sup> Pectoral equals or longer than postorbital;  
scales less than 50; D. 12 or 13.

grandisquamis.



a.<sup>2</sup> Scales smaller, 63 or 64; pectoral  
1 1/2 to 1 3/4, equals postocular, esp.

Saurida filamentosa Ogilby

Saurida filamentosa Ogilby,

, Dec. 20, 1910, p. 86. Off Cape Moreton,  
Queensland, in 73 fathoms.

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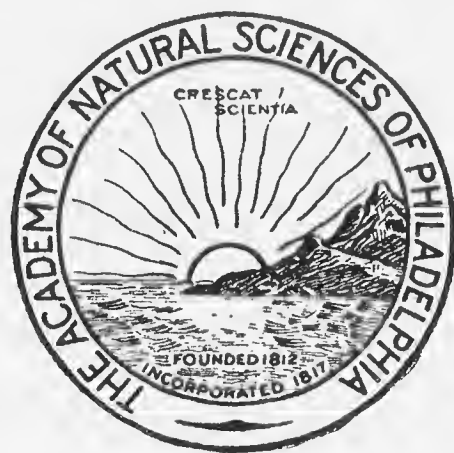
Saurida argyrophanes Günther

Saurus argyrophanes Richardson,  
Ichth. China Japan, 1846, p. 302.  
Canton.

Saurida argyrophanes Günther,  
Cat. Fishes Brit. Mus., vol. 5, 1864,  
p. 400 (China; Japan); Ann. Mag.  
Nat. Hist., ser. 4, vol. 13, 1874, p.  
(Chefoo). — Peters, Monatsber. Akad.  
Wiss. Berlin, 1880, p. 924 (Hingpo).  
— Rutter, Proc. Acad. Nat. Sci.  
Philadelphia, 1897, p. 68 (reference).  
— Kamigae, Class. Cat., 1881, p. 106  
(Tokyo). — Ishikawa and Matsuura,  
Prelim. Cat. Fishes Mus. Tokyo,



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1897, p. 22. — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 350 (Tokyo); Annot. Zool. Japon., 1901, p. 56 (Yokohama). — Jordan and Evermann, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 329 (Formosa). — Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 54 (San Fabian, Zamboanga). — Jordan and Herre, Proc. U. S. Nat. Mus., vol. 32, 1907, p. 519 (Wakanoura, Nagasaki, Kobe, Tokyo, Kawatana, Hakata, Hiroshima). — Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 237 (Manila); Mem. Carnegie Mus., vol. 4, no. 4, 1909, p. 168 (Takao). — Franz, Abhandl. Kön. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 18 (Fukaura and Sagami

Bay). — Snyder, Proc. U. S. Nat.  
Mus., vol. 42, 1912, p. 489 (Okinawa).  
— Jordan and Thompson, Mem.  
Carnegie Mus., vol. 6, no. 4, Sep.  
1914, p. 212 (Osaka, Misaki). —  
Jordan and Hubbs, Mem. Carnegie  
Mus., vol. 10, no. 2, June 27, 1925,  
p. 155 (Misaki, Kagoshima Bay,  
Tokyo, Kobe). — Mori, Journ.  
Pan Pacific Research Inst., vol. 3,  
no. 3, July - Sep. 1928, p. 4 (Korea).



Harpodon squamosus Alcock

Harpodon squamosus Alcock, Ann. Mag.

Nat. Hist., series 6, vol. 8, 1871, p. 127. N.  $15^{\circ}56'$   
E.  $81^{\circ}30'12''$ , 240 to 276 fathoms Bay of

Bengal; series 6, vol. 10, 1872, p. 356  
200 to 300 fathoms

(Bay of Bengal,  $\frac{2}{3}$  Journ. Asiatic Soc. Bengal,

vol. 65, pt. 2, 1876, p. 332 (reference)  
~~(Bay of Bengal,~~

~~off East coast of India, in 200 to 300~~

~~fathoms~~ — Boulenger, Ann. Mag. Nat.

Hist., series 7, vol. 7, 1901, p. 261 (N. Lat.

$25^{\circ}24'$  E. Long.  $57^{\circ}27'$ , in 230 to 243 fathoms).

— Goode and Bean, Oceanic Ichth., 1895,  
p. 154 (reference). — Alcock,

— Alcock, Cat. Deep Sea Fishes Indian  
Mus., 1899, p. 154 (Bay of Bengal,  
240 to 281 fathoms); Illustrat. Zool.  
Investigator, pt. 7, 1900, pl. 30, fig. 1.

Aulopus elongatus Schlegel, Fauna  
 Japonica, Poiss., pts. 10 to 14, 1846,  
 p. 233, pl. 105, fig. 2. Nagasaki.  
Saurida tumbil (not Block) Bleeker,  
 Nederl. Tijdschr. Dierk., vol. 4, 1874,  
 p. 147 (Amoy). — Weber and Beaufort,  
 Fishes Indo Austral. Archipelago,  
 vol. 2, 1913, p. 142 (part). — Fowler,  
 Proc. Acad. Nat. Sci. Philadelphia,  
 1929, p. 602 (Hong Kong).

Depth  $7\frac{1}{4}$  to  $7\frac{2}{5}$ ; head  $3\frac{7}{8}$  to  $4\frac{2}{5}$ ,  
 width  $1\frac{4}{5}$  to 2. Snout  $3\frac{3}{4}$  to  $4\frac{1}{3}$  in  
 head; eye  $5\frac{2}{5}$  to  $6\frac{4}{5}$ , adipose lids  
 expose about half eye, narrow

in young,  $1\frac{1}{3}$  to  $1\frac{1}{2}$  in snout,  
 $1\frac{1}{4}$  to 2 in interorbital; premaxillary  
extends  $1\frac{1}{4}$  to 2 eye diameters  
behind eye, length  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in  
head; dentition exposed, in 4 or 5  
rows with innermost largest and  
2 rows on palatines; interorbital  
 $3\frac{1}{3}$  to 4, broad, depressed concavely.  
Gill rakers as very fine, minute,  
short, villiform teeth; gill filaments  
 $1\frac{1}{3}$  in eye.

Scales 49 to 55 in lateral line  
to caudal base and 3 more on latter;



5 above, 5 or 6 below, 16 to 20  
 predorsal to occiput, 4 rows on  
 postocular. Pectoral and ventral  
 axillary scaly flaps each half of  
 fin. Scales with 3 basal radiating  
 striae, edge scalloped or notched;  
 circuli very fine, not extended  
 apically where entire and  
 exposed edge fringed.

D. I or II, 9, I or I or II, 10, I, second  
 simple ray  $1\frac{1}{5}$  to  $1\frac{2}{5}$  in head;  
 adipose fin  $4\frac{1}{6}$  to  $6\frac{1}{3}$ ; A. II, 8, I or  
II, 9, I, second simple ray  $2\frac{1}{3}$  to  $2\frac{3}{5}$ ;

caudal  $1\frac{1}{5}$  to  $1\frac{1}{4}$ , deeply forked  
and slender lobes pointed; least  
depth of caudal peduncle  $3\frac{3}{5}$  to  $3\frac{3}{4}$ ;  
pectoral  $1\frac{2}{5}$  to  $1\frac{2}{3}$ ; ventral  $1\frac{1}{3}$  to  $1\frac{1}{2}$ .

Back pale olivaceous brown,  
below still paler to whitish. Iris  
pale straw brown. Dorsal, caudal  
and pectoral brownish, ventral  
and anal more whitish and  
adipose fin paler brown than back.

China, Formosa, Riu Kiu, Japan,  
Korea. Apparently distinguished by  
narrow adipose lids and large

scales. From Saurida grandisquamis it differs chiefly in the smaller scales 52 to 58, though is allied in pectoral nearly long as head without snout.

22619 U.S.N.M. Japan. Japanese Government. Length 218 mm. As Aulopus elongatus.

26254 U.S.N.M. Japan. Prof. E.V. Morse. Length 238 mm.

37979 U.S.N.M. Japan. Length 302 mm.

44930 U.S.N.M. Japan. Japanese Government. Length 320? to 335? mm. 3 examples.

49477 U.S.N.M. Tokyo. Length 218 mm.



59772 U.S.N.M. Yamagawa, Japan.  
Dr. H. M. Smith. Length 182 mm.  
As Saurida japonica.

59773 U.S.N.M. Kochi, Japan.  
May 7, 1902. Dr. H. M. Smith. Length  
193 mm. As Saurida japonica.

59774 U.S.N.M. Yamagawa, Japan.  
Dr. H. M. Smith. Length 143 mm.  
As Saurida japonica.

62332 U.S.N.M. Tokyo, Japan.  
D. V. Jordan and J. O. Snyder. Length 230  
to 274 mm. 2 examples.

64645 U.S.N.M. Kawatana, Japan.  
Length 150 mm.

64646 U.S.N.M. Nagasaki, Japan.  
D. V. Jordan and J. O. Snyder. Length  
145 to 228 mm. 5 examples.

64647 U.S.N.M. Tokyo, Japan.  
D.S. Jordan and J.O. Snyder. Length  
455 to 518 mm. 2 examples.

71274 U.S.N.M. Shimizu, Suruga,  
Japan. Bureau of Fisheries. Length  
205 mm.

72165 U.S.N.M. Manila.  
R.C. McGregor. Length 278 mm.

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Saurida caribbaeus Breder

Saurida caribbaeus Breder, Bull.  
Bingham Oceanogr. Collection, vol. 1,  
art. 1, Oct. 19, 1927, p. 14, figs. 7, <sup>and 9.</sup> North  
of Glover reef, 48 fathoms off Yucatan.

— Parr, Bull. Bingham Oceanogr.  
Collection, vol. 3, art. 4, July 1930, p. 7  
(note).

Saurida gracilis (not Duoy and Gaimard)  
Metzelaar,  
Rapp. Kolon. Curaçao, vol. 2, pt. 1, 1919, p.  
23 (off St. Eustatius).

Saurida tumbil (not Bloch) Metzelaar,  
Rapp. Kolon. Curaçao, vol. 2, pt. 1, 1919, p.  
24 (off St. Eustatius).



Saurida suspicio Breder, Bull.

Bingham Oceanogr. Collection, vol. 1,  
art. 1, Oct. 19, 1927, p. 15, figs. 8 and 9.

Misteriosa Bank (between Yucatan and  
Jamaica). — Parr, Bull. Bingham  
Oceanogr. Collection, vol. 3, art. 4, July  
1930, p. 7 (Cat Island, Bahamas).

Depth  $6\frac{1}{2}$  to  $7\frac{3}{4}$ ; head  $3\frac{3}{5}$  to 4,  
width  $2\frac{1}{5}$  to  $2\frac{1}{3}$ . Snout  $3\frac{7}{8}$  to 4 in  
head from snout tip; eye  $3\frac{3}{4}$  to  $4\frac{1}{10}$ ,  
greater than snout or interorbital;  
premaxillary extends  $\frac{4}{5}$  to 1 eye  
diameter behind eye, length  $1\frac{1}{2}$  in

head from snout tip; interorbital  $4\frac{1}{10}$  to  $4\frac{1}{3}$ , bony interorbital  $1\frac{2}{3}$  in eye. Gill rakers as minute spinules, in 6 groups on lower branch of first arch; gill filaments  $1\frac{1}{3}$  in eye.

Scales 48 to 50 in lateral line to caudal base and 3 more on latter; 4 above, 5 below, 15 to 17 predorsal, 4 rows on cheek to hind preopercle ridge. Pectoral axillary scale  $2\frac{1}{4}$  in fin, ventral axillary scale  $2\frac{3}{5}$  in fin. Scale with single basal radiating stria, notched at scale edge; circuli few, not extended apically.

Saurida suspicio Breder

Saurida suspicio Breder, Bull.  
Bingham Oceanogr. Collection, vol. 1,  
art. 1, Oct. 14, 1927, p. 15, figs. 8 and 9.  
Misteriosa Bank (between Yucatan  
and Jamaica). — Parr, Bull. Bingham  
Oceanogr. Collection, vol. 3, art. 4, July  
1930, p. 7 (Cat Island, Bahamas).

Saurida tumbil (not Bloch) Metzelaar,  
Rapp. Kolon. Curaçao, vol. 2, pt. 1, 1919, p.  
24 (off St. Eustatius).



D. II, 6, I to II, 9, I, first branched  
 ray  $1\frac{1}{5}$  in <sup>total</sup> head<sub>1</sub>, <sup>length</sup> adipose fin  $3\frac{1}{2}$   
 to 6; A. I, 9, I or I, 10, I, longest  
 anterior ray  $2\frac{1}{3}$  to  $2\frac{2}{3}$ ; caudal  $1\frac{1}{4}$ ?  
 to  $1\frac{2}{5}$ , well forked; least depth of  
 caudal peduncle 4 to  $4\frac{1}{5}$ ; pectoral  
 $1\frac{3}{5}$  to  $1\frac{3}{4}$ ; ventral  $1\frac{1}{4}$  to  $1\frac{2}{5}$ .

Back and upper surfaces pale  
 brown, with 7 slightly darker  
 transverse bands made up chiefly  
 of blackish dots and extending below  
 lateral line on side of body. Each  
 interspace with less distinct similar

band transversely on back and blotch on and below lateral line. Iris whitish. Pale heart shaped blotch on cranium close behind interorbital. Fins pale, caudal dark grayish terminally.

Caribbean Sea, Bahamas. Poey has evidently listed this species as Saurida, though apparently never

Anal. Soc. Españ. Hist. Nat., Madrid,  
vol. 4, 1875, p. 145.

given any specific name. The interesting specimen from Porto Rico seems to have escaped the attention

of Evermann and Marsh in their  
work on that island. Although  
I have no examples of similar size  
I cannot but think Saurida suspici  
only a variant of younger growth.

37460 U.S.N.M. Cuba. Prof. F.

Poey. Length 83 to 94 mm. 4 examples.

76512. U.S.N.M. Porto Rico.

Fish Hawk Station 151. Length 65 mm.



Saurida argentea MacleaySaurida argentea Macleay, Proc. Linn.

Soc. New South Wales, vol. 6, pt. 2, Sep. 12, 1881, p. 220, Endeavour River, North

Queensland. — Kent, Great Barrier Reef, 1893, p. 298, pl. 46, fig. 3 (Cooktown, Townsville, Bowen, Rockhampton), pp. 312, 370 (reference).

Depth 10 in total length; head 7. Head flat above and tapers to rounded snout, which considerably longer than eye diameter. Short predorsal ridge.

Scales 55 in lateral line; 5 above, 8 below.

D. 12, higher than long, first rays much higher than body; A. 10; caudal forked; pectoral not nearly reaching ventral, placed only very little in front of vertical

scale of lateral line, little shorter than ventral, which  $\frac{4}{5}$  of head.

Reddish, median line of back darker. Two broad greenish yellow bands on upper half of side; below third narrow linear yellow band; bands extend forward to snout and maxillary, upper passing through eye and unites with dorsal band behind soft fin, median terminating at caudal base and lower above end of anal; bands separated by narrow shining pink bars. Lower surface pearly white. Dark spot on upper lateral band close behind eye and second at preopercle angle, both connected by lighter band. Larger black blotch on each side of upper half of caudal peduncle; united above by broad brown band. Fins red, basal half of rays

from dorsal.

Bluish above, whitish beneath,  
most of scales showing silvery  
center. Middle rays of tail  
blackish. Length 178 mm.

(Macleay.)

Endeavour River, Queensland.



<sup>Murray and</sup>  
Bathymicrops regis Hjort

<sup>Murray and</sup>  
Bathymicrops regis Hjort, The Depths  
of the Ocean, 1912, pp. 396, 416, fig. 305.

N.  $25^{\circ}54'$  W.  $24^{\circ}14'$ , west of Canaries.

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Saurida gracilis (Quoy and Gaimard)  
Saurus gracilis Quoy and Gaimard, Voy.  
Uranie, Zoot., 1824, p. 224. Hawaiian Islands;  
Mauritius.

Saurida gracilis Jenkins, Bull. U.S. Fish  
Comm., vol. 22, 1902 (1903), p. 433 (Honolulu).  
— Snyder, Bull. U.S. Fish Comm., vol. 22, 1902  
(1904), p. 521 (Hanalei Bay, Kauai). — Jordan  
and Evermann, Bull. U.S. Fish Comm., vol. 23,  
pt. 1, 1903 (1905), p. 65 (Hilo; Honolulu). —  
Gilbert, Bull. U.S. Fish Comm., vol. 23, pt. 2,  
1903 (1905), p. 557 (off northern Maui in 14 to  
18 fathoms). — Seale, Occas. Papers Bishop  
Mus., vol. 4, no. 1, 1906, p. 5 (Shortland Island,  
Solomons). — Jordan and Seale, Bull. Bur.

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Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 237 (Cuyo); Mem. Carnegie Mus., vol. 4, no. 4, 1909, p. 168 (Jabao).  
~~Macarophia~~, 1911, p. 507 (types of *Synodus*

*charpi*; Hawaiian Islands; Hilo). — Kendall

and Goldsborough, Mem. Mus. Comp. Zool.,

vol. 26, 1911, p. 244 (Makemo, Paumotu; Truck

Group, Carolines). — Weber and Beaufort,

Fishes Indo Austral. Archipelago, vol. 2, 1913,

p. 143 (fig. 53, p. 141) (Lias, Macassar, Menado,

Salayer, Buton, Biaru, Siau, Karkaralong

Islands, Abi Mayor, Lombok, Misa Laut,

Banda, Tuir, Kei Islands), p. 150 (description  
 of Lina). — Fowler, Copeia, no. 112, nov. 20, 1922,



Fisher., vol. 25, 1905 (1906), p. 189 (Apia). —

→ Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1910, p. 376 (Solomons; <sup>as</sup> Fiji; Society Islands; Hawaii).

— Fowler, Proc. Acad. Nat. Sci.

Philadelphia, 1911; p. 507 (types of Synodus

sharpi; Hawaiian Islands; Hilo). — Kendall

and Goldsborough, Mem. Mus. Comp. Zool.,

vol. 26, 1911, p. 244 (Makemo, Paumotu; Cook

Group, Carolines). — Weber and Beaufort,

Fishes Indo Austral. Archipelago, vol. 2, 1913,

p. 143, fig. 53, p. 141 (Lias, Macassar, Menado,

Sulaver, Buton, Biaru, Siau, Karkaralong

Islands, Abi Mayor, Lombok, Nusa Laut,

Banda, Tiur, Kei Islands), p. 150 (description

of Laua). — Fowler, Copeia, no. 112, nov. 20, 1922,

p. 82 (Hawaii); Bull. Bishop Mus., no. 22,  
1925, p. 4 (Guam); Mem. Bishop Mus.,  
vol. 10, 1928, p. 66 (Honolulu, Shortland Island,  
Guam, Samoa, Cook, Society Islands, Itilo,  
types of Synodus sharpi). — McCulloch, Fishes  
New South Wales, ed. 2, 1927, p. 20.

Saurida nebulosa Valenciennes, Hist. Nat. Poiss., vol.  
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Timor, Tahiti. — Quichenot, Notes Ile Réunion,  
vol. 2, 1862, p. 29. — Günther, Cat. Fishes Brit. Mus.,  
Amboina, Hawaiian Islands  
vol. 5, 1864, p. 399 (Madagascar, 1). — Bleeker,  
Atlas Ichth. Ind. Néerland., vol. 6, 1866-72, p.

156, pl. (1) 277, fig. 1 (Lias, Celebes, Singapore);  
Sangi, Flores, Solor, Timor, Haluakera, Ternate, Buro,  
Amboina, Ceram, Banda, Aru, New Guinea;  
Verslagen Akad. Wet. Amsterdam, series 2, vol. 2,  
1868, p. 306 (Aru Islands) ~~and 54 (Banda, Ceram);~~



- Nederl. Tijdschr. Dierk., vol. 1, 1868, p. 254  
 (Wahai, Ceram), p. 272 (Atapupu, Timor).  
 — Schmeltz, Cat. Mus. Godeffroy, no. 4, 1868, p.  
 24 (Uvea). — Klunzinger, Verhandl. zool.  
 botan. Gesell. Wien, vol. 21, 1871, p. 571 (Red  
 Sea). — Schmeltz, Cat. Mus. Godeffroy, no. 5,  
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 Akad. Wiss. Berlin, 1876 (1877), p. 846 (Amboina).  
 ✓ — Streets, Bull. U. S. Nat. Mus., no. 7, 1877, p. 6  
 (Honolulu). — Day, Fishes of India, pt. 4, 1878,  
 p. 505. — Bleeker, Arch. Néerl. Sci. Nat. Harlem,  
 vol. 13, 1878, p. 38 (New Guinea). — Bleeker,  
~~Verhandel~~ Akad. Wet. Amsterdam, vol. 18, no. 3,  
 1879, p. 2 (Mauritius). — Macleay, Proc. Linn.  
 Soc. New South Wales, vol. 6, 1881, p. 218 (Port



Jackson). — Meyer, Anal. Soc. Españ. Hist. Nat. Madrid, vol. 14, 1885, p. 41 (Kordo, Mysore).

— Day, Fauna British India, Fishes, vol. 1, 1889, p. 411. — Steindachner, Abhandl.

Senckenberg. Gesell., vol. 25, 1900, p. 449 (Ternate).

Gentex nebulosa (Blander) Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. . . . Tahiti.

Saurus ferox Eydoux and Soleyet, Voy. Bonite, Zool., vol. 1, 1842, p. 197, pl. 7, fig. 3. Locality unknown. — Ramsay, Proc. Linn. Soc. New-South Wales, vol. 8, 1881, p. 177 (Port Jackson).

Synodus sharpi Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 477, pl. 19, fig. 2. Hawaiian Islands.

Saurida tumbil (not Block) Fowler, Proc.  
Acad. Nat. Sci. Philadelphia, 1900, p. 498  
(Hawaiian Islands).

Synodus varius (not Lacépède) Jordan and  
Evermann, Bull. U. S. Fish Comm., vol. 22, <sup>pt. 1,</sup> 1903  
(1905), p. 63, <sup>(65)</sup> (synonymy).

Synodus japonicus (not Houttuy) Jordan and  
Herre, Proc. U. S. Nat. Mus., vol. 32, 1907, p. 516  
(synonymy).

Saurida argyrophanes (not

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Depth  $5\frac{3}{5}$  to  $7\frac{4}{5}$ ; head  $3\frac{2}{3}$  to  $4\frac{1}{4}$ , width  $1\frac{7}{8}$  to 2. Snout  $3\frac{7}{8}$  to  $4\frac{1}{3}$  in head; eye 4 to 6,  $1\frac{1}{3}$  in snout,  $1\frac{1}{3}$  to  $1\frac{2}{5}$  in interorbital; adipose lids rather narrow; premaxillary extended  $1\frac{1}{5}$  to 2 eye diameters behind eye, length  $1\frac{2}{5}$  to  $1\frac{3}{5}$  in head; interorbital 4 to 6, slightly concave. Gill rakers  $30+50$ , fine denticles, barely  $\frac{1}{3}$  gill filaments, which  $\frac{1}{2}$  of eye.

Scales 44 to 51 in lateral line to caudal base and 3 or 4 more on



latter; 4 above, 4 to 6 below,  
 17 or 18 predorsal, 5 rows on  
 postocular. Axillary pectoral scale  
 3 in fin, ventral axillary scale  
 3 in fin. Scales with 2 or 3 basal  
 radiating striae, edge scalloped;  
 circuli fine.

D. II, 8, I or II, 9, I, first branched  
 ray  $1\frac{1}{5}$  to  $1\frac{2}{5}$  in head; adipose fin  
 5; A. IV, 6, I to IV, 8, I, first branched  
 ray  $2\frac{1}{8}$  to  $2\frac{1}{4}$ ; caudal  $1\frac{1}{4}$  to  $1\frac{1}{3}$ ,  
 forked; least depth of caudal  
 peduncle 4 to  $4\frac{1}{3}$ ; pectoral  $1\frac{4}{5}$  to  $1\frac{7}{8}$ ,

$1\frac{1}{8}$  in postocular; ventral  $1\frac{1}{6}$  to  $1\frac{1}{4}$  in head.

Brown, paler to whitish below. Back with 7 dusky brown saddles, interspaces with transverse streaks of paler brown. Along lateral line brownish blotch at each dark saddle and streaks over back. Head above mottled with darker. Four deep brown transverse blotches on mandible. Iris brown. Fins pale brown, each dorsal ray with 7 deep brown spots. Caudal with 3 irregular

broad deep brown transverse bands,  
in pale interspaces 3 or 4 narrow  
paler lines. Anal whitish. Pectoral  
with 4 transverse irregular wavy  
brown lines and 3 on ventral only  
paler.

Red Sea, Mauritius, Madagascar,  
Singapore, East Indies, Philippines,  
Formosa, Riu Kiu, Micronesia, Melanesia,  
Polynesia, Hawaii.



51030 U.S.N.M.  
Bureau of Fisheries 03170.  
Length 182 mm.

Hawaii.

52295 U.S.N.M. Apia, Samoa.  
Bureau of Fisheries.  
Length 190 mm.

53363 U.S.N.M. Honolulu.  
Bureau of Fisheries.  
Length 210? mm.

55203 U.S.N.M. Hilo, Hawaii.  
Albatross Collection 1902.  
Length 63 mm.

55491 U.S.N.M.  
Bureau of Fisheries.  
Length 132 to 157 mm. 3 examples.

56148 U.S.N.M.  
Bureau of Fisheries 3673.  
Length 190 mm. Pectoral  $1\frac{1}{6}$  in postocular.  
As Saurida argyrophanes.

56220 U.S.N.M.

Bureau of Fisheries 3983.  
Length 120 mm.

56295 U.S.N.M. Cavite, Luzon.

G. A. Ling.

Length 97 to 108 mm. 3 examples.

Pectoral  $1\frac{1}{6}$  to  $1\frac{1}{4}$  in postocular.

As Saurida argyrophanes.

66012 U.S.N.M. Makemo, Paumotu.  
Albatross Collection 1899.

Length 167 mm.

75442 U.S.N.M. Naha, Okinawa,  
Riu Kiu. Albatross Collection 1906.

Length 128 to 180 mm. 4 examples.

Pectoral  $1\frac{1}{5}$  to  $1\frac{1}{3}$  in postocular.

As Saurida argyrophanes.

78078 U.S.N.M.

~~Bureau~~ Bureau of Fisheries. Length 57  
to 105 mm. 5 examples.

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A.N.S.P. Hawaiian Islands.  
Dr. J.K. Townsend. Length 146 to 168 mm.  
As Saurida tumbil.

16084 A.N.S.P. Hawaiian Islands.  
Dr. Benjamin Sharp. Type of Synodus  
sharpi. Length 78 mm.

16085 and 16086 A.N.S.P. Hawaiian  
Islands. Dr. Benjamin Sharp. Paratypes  
of Synodus sharpi. Length 50 to 63  
mm.

A.N.S.P. Hilo, Hawaii.  
Bureau of Fisheries  
Length 63 to 103 mm.



Saurida tumbil (Bloch)

Saurida tumbil Bloch, Naturges. Linsland.

Fische, vol. 9, 1795, p. 112, pl. 430. No locality  
(Collection Herr John).

Saurida tumbil Valenciennes, Hist. Nat. Poiss.,  
vol. 22, 1849, p. 500 (<sup>Macao, Red Sea, Suez, Waigiu, Vanikoro</sup> Malabar, Coromandel, Mauritius).

— Bleeker, Verhandel. Batavia. Genootsch.

(Japan), vol. 25, 1853, p. 19 (reference); (Japan),  
vol. 26, 1857, p. 6 (reference); Act. Soc. Sci.

Ind. Néerland., no. 3, vol. 3, 1857-58, p. 6

(Japan); no. 5, vol. 5, 1858-59, p. 3 (Nagasaki);

Néerland. Tijdschr. Dierk., vol. 2, 1865, p. 176

(Siam; compiled).

Pseudupeneus jeffi Ogilby

Pseudupeneus jeffi Ogilby, Proc. Roy. Soc. Queensland, vol. 21, 1908, pp. 3, 19. Brisbane River, Queensland.

Depth  $3\frac{1}{2}$ ; head  $3\frac{1}{5}$ . Snout  $2\frac{1}{5}$  in head; eye  $1\frac{3}{5}$  in snout, equals interorbital; maxillary reaches midway between front nostril and eye, expansion  $\frac{5}{8}$  eye; lower jaw included; barbels reach opposite hind pupil edge; teeth stout, conic, uniserial in both jaws.

Scales 28 in lateral line to caudal base and 3 more on latter; 3 above, 7 below, 3 rows on cheeks. Tubers in lateral line with 3 to 5 tubules, mostly on upper side.

D. VIII - I, 8, third spine  $\frac{4}{7}$  head, outer rays  $\frac{4}{5}$  head; A. II, 6; caudal  $\frac{4}{5}$  of head; least depth of caudal peduncle  $\frac{3}{5}$ ; pectoral reaches eleventh



Saurida tumbil Cantor, Journ. Asiatic Soc.

Bengal, vol. 18, pt. 2, 1849, p. 1421 (Pinang,

Malay Peninsula, Singapore). — Günther,

Cat. Fishes Brit. Mus., vol. 5, 1864, p. 399

(Pinang specimens). — Klunzinger, Verhandl.

zool. botan. Wien, vol. 21, 1871, p. 591 (Red Sea).

— Bleeker, Atlas Ichth. Ind. Néerland., vol.

6, 1866-72, p. 155, pl. (1) 277, fig. 4 (Java, Bali, Bawean,  
Sumatra, Sias, Pinang, Singapore, Bintang, Banka, Celebes,  
Waigiu). — Alleyne and Macleay,

Proc. Linn. Soc. New South Wales, vol. 1, pt. 4, 1877, p.

348 (New Guinea). — Günther, Rep. Voy. Challenger,

vol. 1, pt. 6, 1880, p. 71 (Inland Sea of Japan). —

Meyer, Anal. Soc. Españ. Hist. Nat. Madrid, vol.

14, 1885, p. 41 (Kordo, Mysore). — Boulenger,

Proc. Zool. Soc. London, 1887, p. 665 (Muscat). —



Elera, Cat. Fauna Filipinas, vol. 1, 1895, p. 572  
(Luzon, Manila Bay, Navotas). — Waite,  
Mem. Australian Mus., vol. 4, 1899, p. 53.  
(Newcastle Bight, in 28-40 fathoms). — Buniker,  
Mitteil. naturh. Mus. Hamburg, vol. 21, 1903  
(1904), p. 185 (Singapore). — Fowler, Journ.  
Acad. Nat. Sci. Philadelphia, series 2, vol. 12, 1904,  
p. 501 (Padang). — Waite, Records Australian  
Mus., vol. 6, pt. 2, 1905, p. 58 (Freemantle). —  
Steindachner, Denkschr. Akad. Wiss. Wien,  
math.-naturw. Klasse, vol. 71, pt. 1, 1907, p. 154  
(Gischn). — Gilchrist and Thompson, Ann.  
South African Mus., vol. 6, 1908-11, p. 265 (Natal).  
— Jordan and Richardson, Mem. Carnegie Mus.,  
vol. 4, no. 4, 1909, p. 108 (Takao). — Fowler, Proc.



Acad. Nat. Sci. Philadelphia, 1911, p. 569

(Padang specimens). — Weber and Beaufort,

Fishes Indo Austral. Archipelago, vol. 2, 1913,

p. 142 (Batavia; Sius, Singapore, Makassar,

Amboin). — Gilchrist and Thompson, Ann.

Durban Mus., vol. 1, pt. 4, 1917, p. 307 (reference).

— McCulloch, Fishes New South Wales, ed. 2, 1927,

p. 20, pl. 6, fig. 67a. — Fowler, Proc. Acad. Nat.

Sci. Philadelphia, 1927, p. 261 (Orion; Philippines).

— Mori, Journ. Pan Pacific Research Inst., vol. 3,

no. 3, July-Sep. 1928, p. 4 (Chinnampo, Korea).

— Fowler, Mem. Bishop Mus., vol. 10, 1928, p.

66 (compiled).

→ Synodus tumbil White, Mem. Australian Mus.,  
vol. 4, 1899, p. 53 (Newcastle Bight, in 28 to 40 fathoms).



Saurus badi Cuvier, Règne Animal., vol. 2,  
ed. 2, 1827, p. 314 (on Badi mottah Russell,  
Fishes of Coromandel, vol. , 1803, p. 56, pl. 172, <sup>Vijagapatam</sup>).  
— Bleeker, Journ. Indian Archipelago, vol.  
3, 1849, p. 69 (Macassar). — Cantor, Journ.

Asiat. Soc. Bengal, vol. 18, pt. 2, 1849, p. 1252  
(Pinang, Malay Peninsula, Singapore).

Saurida badi Jordan and Seale, Proc. U.S. Nat.  
Mus., vol. 28, 1905, p. 772 (Negros).

Saurus badimottah Rüppell, Neue Wirbelth.  
Fische, 1835, p. 77.

Saurus undosquamis Richardson, Voyage Erebus  
and Terror, Ichth., 1844-48, p. 138, pl. 51, figs. 1-  
6. North West Australia. — Klunzinger, Sitz.  
Ber. Akad. Wiss. Wien, math.-naturw. Klasse,  
vol. 80, pt. 1, 1879, p. (Queensland).

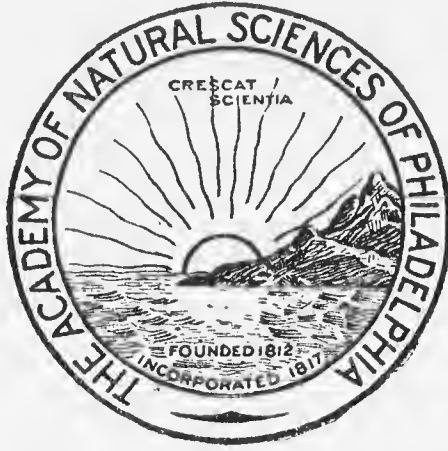
Saurida undosquamis Günther,  
 Cat. Fishes Brit. Mus., vol. 5,  
 1864, p. 400 (type). — Macleay,  
 Proc. Linn. Soc. New South Wales,  
 vol. 6, 1881, p. 218 (copied). —  
Ogilby, Comm. Fish Fisher.  
 Queensland, 1915, p. 48 (Brisbane).  
 — Regan, Ann. Durban Mus., vol.  
 2, 1917-20, p. 76 ( Natal ).

Saurida australis Castelnau, Proc.  
 Linn. Soc. New South Wales, vol. 3,  
 1879, p. 393. Port Jackson. —

Macleay, Proc. Linn. Soc. New South  
 Wales, vol. 6, 1881, p. 218 (reference).

Saurida triculenta Macleay, Proc.  
 Linn. Soc. New South Wales, vol.  
 6, pt. 2, Sep. 12, 1881, p. 219. Port  
 Jackson.

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? Saurida ferox (not Eydoux and  
Souleyet) Ramsay, Proc. Linn. Soc.  
New South Wales, vol. 8, pt. 1, June 19,  
1883, p. 177 (Port Jackson).

(Synodus japonica (not Houttuyn)  
Jordan and Seale, Bull. Bur. Fisher,  
vol. 26, 1906 (1907), p. 5 (Cavite).

Saurida argyrophanes (not Richardson)  
Elera, Cat. Fauna Filipinas, vol. 1,  
1895, p. 572 (Luzon, Manila Bay, havotas).  
— Fowler, Copeia, no. 58, June 18, 1908, p. 62  
(Philippines).

3135

Depth 7 to  $7\frac{2}{5}$ ; head 4 to  $4\frac{1}{6}$ , width  $1\frac{2}{3}$  to 2. Snout 4 to  $4\frac{1}{4}$  in head from upper jaw tip; eye 5 to 6,  $1\frac{1}{4}$  to  $1\frac{2}{5}$  in snout, 1 to  $1\frac{3}{4}$  in interorbital; adipose eyelids cover nearly  $\frac{1}{2}$  of eye; premaxillary extends nearly  $1\frac{1}{4}$  to  $1\frac{3}{5}$  eye diameters behind eye, length  $1\frac{1}{5}$  to  $1\frac{3}{7}$  in head from snout tip; interorbital 3 to 5, gently concave. Gill rakers numerous minute denticles; gill filaments  $1\frac{1}{4}$  in eye.

Scales 51 to 53 in lateral line to caudal base and 3 or 4 more on latter; 5 above, 4 to 6 below,

( ) . — Weber and Beaufort,  
Fishes Indo Austral. Archipelago, vol.

2, 1913, p. 141 (Uru Islands). — Fowler,

Mem. Bishop Mus., vol. 10, 1928, p. 66

(compiled); Proc. Acad. Nat. Sci. Philadelphia,  
1929, p. 603 (Hong Kong).

— Fowler and Bean, Proc. U. S. Nat. Mus.,

vol. 62, 1922, p. 3 (Takao, Formosa). —

~~Saurida~~ Jordan and Hubbs, Mem.

Carnegie Mus., vol. 10, no. 2, June 27,

1925, p. 155 (compiled).

Saurida macrolepis Tanaka, Zool.

Mag., vol. 29, 1916, p. 39.



18 to 20 predorsal, 5 or 6 postocular rows. Axillary pectoral scale  $1\frac{1}{5}$  to  $1\frac{2}{5}$  in fin, axillary ventral scale  $1\frac{3}{5}$  to  $1\frac{4}{5}$  in fin. Scales with 3 basal radiating striae, edge scalloped; circuli very fine, not extended apically which with feeble radiating striae leaving fringed edge.

D. II, 9, I, first branched ray  $1\frac{1}{8}$  to  $1\frac{1}{5}$  in total head length; adipose fin 5 to  $5\frac{2}{5}$ ; A. II, 8, I to II, 10, I, first branched ray  $2\frac{2}{5}$  to  $2\frac{2}{3}$ .

caudal  $1\frac{1}{8}$  to  $1\frac{1}{4}$ , forked; least depth of caudal peduncle  $3\frac{3}{4}$  to  $3\frac{7}{8}$ ; pectoral  $1\frac{9}{10}$  to  $2\frac{1}{10}$ ,  $1\frac{1}{8}$  to  $1\frac{1}{5}$  in postocular; ventral  $1\frac{1}{4}$  to  $1\frac{1}{2}$  in head.

Back brown, each scale with paler spot, thus forming longitudinal rows. Under surfaces of body paler to whitish. Iris neutral gray. Fins brown. Dorsal and caudal grayish terminally. Pectoral with broad dusky brown lower hind border. Ventral with dusky medially and

terminally, though border all around  
paler.

Red Sea, Mauritius, Natal, India,  
Malay Peninsula, Pinang, Singapore,  
Siam, East Indies, Philippines,  
Formosa, Japan, Korea, Queensland,  
North west Australia, Western  
Australia, New South Wales.



6720 and 6721. Manila market. <sup>3139</sup>  
December 4, 1908. Length 305 to 329  
mm.

8491. Mantaguin Bay, Palawan.  
April 2, 1909. Length 235 to 269 mm.  
2 examples.

7887. Mariveles Bay, Manila Bay,  
Luzon. January 29, 1909. Length 300 mm.

7985. Pagapas Bay, Luzon. February  
20, 1909. Length 333 mm.

8575 and 8576. San Fernando  
Point Light, N.  $39^{\circ}$  E., 8.4 miles (N.  $16^{\circ}$   
 $30'36''$  E.  $120^{\circ}11'6''$ ), west coast Luzon.  
In 45 fathoms. May 10, 1909. Length  
278 to 288 mm.

8302. Sorsogon market, Luzon.  
March 12, 1909. Length 260 mm.

47601 U.S.N.M. Red Sea. New York  
Museum. Length 264 to 295 mm.  
3 examples.

51995 U.S.N.M. Negros, Philippines.  
 Dr. Bashford Dean. Length 275 mm.  
 as Laurida badi.

72525 U.S.N.M. Batavia, Java.  
 April 2, 1909. O. Bryant and W.  
 Palmer. Length 94 mm.

A.N.S.P. Padang,  
 Sumatra. A.W. Harrison and H.L. Miller.  
 Length 125 to 343 mm. When fresh in  
 alcohol olivaceous brown above, below  
 whitish. Iris slaty, yellowish circle  
 around pupil. Fins mostly pale  
 olivaceous brownish. Dorsal unmarked  
 except slight dusky shade terminally.  
 Caudal similar, upper edge with  
 faint traces of narrow transverse brownish  
 spots. Pectoral slaty terminally.  
 Ventral paler. Anal whitish. F

Saurida grandisquamis Günther <sup>3141</sup>

Saurida grandisquamis Günther, Cat. Fishes

Brit. Mus., vol. 5, 1864, p. 400. Louisiades;

Australia? (Mac Gillivray). — Alleyne and

Macleay, Proc. Linn. Soc. New South Wales,

vol. 1, pt. 4, 1877, p. 348 (Cape Grenville,

Queensland); — Macleay, Proc. Linn. Soc.

New South Wales, vol. 6, 1881, p. 219 (Cape Grenville).

{ — Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880,  
p. 50 (Arafura Sea).

— Duncker, Mitteil. Naturh. Mus. Hamburg,  
vol. 21, 1903 (1904), p. 185 (Kuala Lumpur). —

Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1910,  
p. 377 (Louisiades; Arafura Sea). — Weber, Abhandl.

Venckenberg. Naturf. Gesell., vol. 34, 1911, p. 22



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( ). — Weber and Beaufort,  
Fishes Indo Austral. Archipelago, vol.  
2, 1913, p. 141 (Arw Islands). — Fowler  
and Bean, Proc. U. S. Nat. Mus., vol. 62,  
1922, p. 3 (Takao, Formosa). — Jordan and  
Hubbs, Mem. Carnegie Mus., vol. 10, no. 2,  
June 27, 1925, p. 155 (compiled). — Fowler,  
Mem. Bishop Mus., vol. 10, 1928, p. 66  
(compiled); Proc. Acad. Nat. Sci.  
Philadelphia, 1929, p. 603 (Hong Kong).

Saurida macrolepis Tanaka, Zool. Mag.,  
vol. 29, 1916, p. 39.

3143

Depth  $6\frac{2}{3}$  to  $9\frac{1}{4}$ ; head  $3\frac{4}{5}$  to  $4\frac{1}{6}$ , width 2 to  $2\frac{1}{8}$ . Snout 4 to 5 in head; eye  $3\frac{4}{5}$  to 5, 1 to  $1\frac{1}{8}$  in snout, subequal with or little greater than interorbital; premaxillary extends eye diameter behind eye, length  $1\frac{2}{5}$  to  $2\frac{2}{5}$  in head; interorbital 5 to 6, depressed, slightly concave medially. Gill rakers as narrow band of very numerous, fine, irregular, close set, variable denticles; gill filaments  $1\frac{1}{3}$  in head.

Scales 42 to 45 in lateral line to caudal base and 3 or 4 more on

latter; 3 or 4 above, 5 below, 18 to 21? predorsal. Scales with 2 to 4 basal radiating striae, edge scalloped; apical edge fimbriate.

D. II, 9, I or III, 10, I, first branched ray 1 in head; adipose fin  $3\frac{1}{2}$  to  $3\frac{3}{5}$ ; A. II or III, 9, I, first branched ray  $1\frac{7}{8}$  to  $2\frac{1}{3}$ ; caudal  $1\frac{1}{8}$  to  $1\frac{1}{4}$ , well forked; least depth of caudal peduncle  $3\frac{1}{4}$  to  $3\frac{1}{3}$ ; pectoral  $1\frac{1}{4}$  to  $1\frac{2}{5}$ ; ventral  $1\frac{1}{4}$  to  $1\frac{1}{3}$ .

Largely pale brown, mottled with darker on back, sides and lower



surface very light brown. Iris gray brown. Dorsal, caudal and pectoral with dusky or grayish, other fins whitish.

East Indies, China, Formosa, Japan, Melanesia, Queensland.

76632 U.S.N.M. Takao, Formosa.  
Dr. Fred Baker. Length 87 mm.

76633 U.S.N.M. Takao, Formosa.  
Dr. Fred Baker. Length to mm.  
2 examples.

76634 U.S.N.M. Takao, Formosa,  
Dr. Fred Baker. Length 53 to 70 mm.  
5 examples.

A.N.S.P. Hong Kong. April 1929.  
Henry W. Fowler. Length 220 mm.

Saurida eso Jordan and Herre

Saurida eso Jordan and Herre, Proc.  
U. S. Nat. Mus., vol. 32, 1907, p. 520, fig.

1. Wakanoura, Kobe, Tsunaga. — Franz,

Abhandl. Kön. Bayer. Akad. Wiss.,

vol. 4, Suppl. band 1, 1910, p. 18 (Aburatsubo).

— Mori, Journ. Pan Pacific Research Inst.,  
vol. 3, no. 3, July - Sep. 1928, p. 4 (Fusan).

— Jordan and Hubbs, Mem. Carnegie  
Mus., vol. 10, no. 2, June 27, 1925, p. 155

(Tokyo, Kobe, Misawa Bay, Toyama,

Miyazu; Hong Kong).

— Jordan and Thompson, Mem. Carnegie Mus., vol. 6,  
no. 4, Sep. 1914, p. 212 (Osaka; Shimomatsubai).

— Jordan and Metz, Mem. Carnegie Mus., vol. 6,  
no. 1, June 1913, p. 12, fig. 12 (Fusan, Korea).

Saurida undoyuensis Günther, Cat. Fishes  
Brit. Mus., vol. 5, 1864, p. 400 (type).  
— Macleay, Proc. Linn. Soc. New South Wales,  
vol. 6, 1881, p. 218 (copied). — Gilby,  
Comm. Fish Fisher. Queensland, 1915, p. 48  
(Brisbane). — Regan, Ann. Burban Mus., vol.  
2, 1917-20, p. 76 (Natal).

Saurus argyrophanes Richardson, Ichth. China  
Japan, 1846, p. 302, Canton.

Saurida argyrophanes Günther, Cat. Fishes  
Brit. Mus., vol. 5, 1864, p. 400 (China; Japan).  
— Hamise, Class. Cat., 1851, p. 106 (Tokyo). —  
Elera, Cat. Fauna Filipinas, vol. 1, 1895, p. 572  
(Luzon, Manila Bay, Navotas). — Ishikawa  
and Matsumura, Prelim. Cat. Fishes Mus. Tokyo,

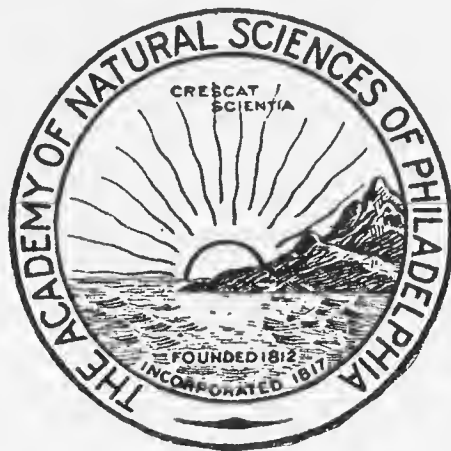


Synodus japonica (not Houttuyn)  
Jordan and Evermann, Proc. U. S.  
Nat. Mus., vol. 25, 1902, p. 329  
(Wakabayashi, Japan).

Sawida tumbil (not Bloch) Weber  
and Beaufort, Fisher Indo-Austral.  
Archipelago, vol. 2, 1913, p. 142 (part).

Depth  $7\frac{3}{5}$  to  $7\frac{7}{8}$ ; head  $4\frac{1}{4}$  to  
 $4\frac{2}{3}$ , width  $1\frac{1}{2}$  to  $1\frac{4}{5}$ . Snout  
 $3\frac{1}{3}$  to  $4\frac{2}{5}$  in head; eye, <sup>6 to</sup>  $6\frac{1}{2}$ ,  
 $1\frac{1}{2}$  to  $1\frac{2}{3}$  in snout,  $1\frac{4}{5}$  to 2 in  
interorbital; adipose lids expose  
 $\frac{1}{2}$  of eye,  $\frac{3}{5}$  of eye in smaller  
example; premaxillary extends  
 $1\frac{1}{2}$  eye diameters behind eye,  
length  $1\frac{1}{2}$  in head; teeth fine,

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OF PHILADELPHIA



JAMES A. G. REHN  
SECRETARY

LOGAN SQUARE  
PHILADELPHIA, PA.

villiform, in 4 or 5 series in jaws with innermost longer, all exposed; 2 rather broad bands of similar teeth on palatines; interorbital  $2\frac{7}{8}$  to  $3\frac{1}{4}$ , broadly depressed, slightly concave. Gill rakers as minute spinules; gill filaments  $1\frac{1}{6}$  in eye.

Scales 59 or 60 in lateral line to caudal base and 4 more on latter; 5 above, 8 below, 23 or 24 predorsal, 4 postocular rows. Pectoral axillary scale  $1\frac{3}{4}$  to  $1\frac{4}{5}$  in fin, ventral axillary scale  $2\frac{1}{4}$ . Caudal scaly.



Scales with 3 or 4 basal radiating striae, edge scalloped; circuli very fine, not extended apically.

D. II, 8, I or II, 9, I, first branched ray  $1\frac{1}{3}$  in head; adipose fin  $4\frac{3}{4}$  to  $7\frac{3}{4}$ ; A. II, 9, I, first branched ray  $2\frac{1}{10}$  to  $2\frac{1}{2}$ ; caudal  $1\frac{1}{8}$  to  $1\frac{1}{2}$ , forked, lobes pointed; least depth of caudal peduncle  $3\frac{1}{3}$  to  $3\frac{2}{5}$ ; pectoral  $1\frac{1}{2}$  to  $1\frac{3}{4}$ , equals postocular; ventral  $1\frac{1}{6}$  to  $1\frac{1}{5}$  in head.

Brown above lateral line, scales with paler centers, below paler or

brownish white. Iris grayish, adipose  
lids pale. Dorsal, caudal and  
pectoral brown, tipped with dusky.  
Anal and ventral pale brown.

China, Japan, Korea. The  
distinctions given by Jordan and Herre  
for comparison with Saurida tumbil  
do not seem to hold as my specimens  
of the latter are marked exactly as  
in the present species. The adipose  
eyelids of Saurida es is wide, a  
character, however, difficult to estimate  
without direct comparison.

37758 U.S.N.M. Korea.

J. B. Bernadow. Length 175? mm.

57847 U.S.N.M. Wakanoura, Japan.

D. V. Jordan and J. Q. Snyder. Length  
336 mm. Type.



Genus Harpadon Le Sueur

Harpadon Le Sueur, Journ. Acad. Nat. Sci. Philadelphia, vol. 5, 1845, p. 50.

Type Salmo (Harpadon) microps Le Sueur, monotypic.

Harpadon Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 401. Type Salmo (Harpadon) microps Le Sueur.

Triurus Swainson, Nat. Hist. Animals, Fishes, vol. 2, 1839, p. 288. Type Triurus microcephalus Swainson, monotypic.

Sauridichthys Bleeker, Natuurk. Tijdschr. Ned. Ind. <sup>1</sup>, vol. 15, 1856, p. 163. Type Saurus ophiodon Valenciennes.

Body elongate, compressed. Head rather small, robust. Snout very short, rounded. Eye small, greatly advanced. Mouth cleft deep, upper edge formed by thin tapering premaxillary. No maxillaries. Mandible protruded. Teeth cardiform, recurved, unequal, depressible, largest in jaws, more or less barbed. Palatines and tongue with teeth. Gill openings wide, membranes free from isthmus. Branchiostegals 17 to 25. Skeleton rather firm. Air bladder small or

absent. Pyloric appendages 16.  
Intestine short. Scales thin, cycloid,  
deciduous, none anteriorly on body.  
Lateral line axial, complete. Dorsal  
short, inserted premedian. Adipose  
fin present. Anal postmedian. Caudal  
forked or trilobate. Pectoral placed  
high, small or long. Ventral  
moderate or long.

~~Subgenus Ho~~



Monday

R. DALE BENSON, JR.  
JUANITA APARTMENTS  
5309 ATLANTIC AVENUE  
VENTNOR, N. J.

Mr Henry W. Fowler

Dear Henry

glad to get the data  
on the blennies as it is interesting  
and Jansson was anxious to know  
what they were. They took a 30 lb  
thrasher shark in young's fair  
net on July 1st and it is the  
first specimen ever taken for 30  
year in this net. I have quite  
a number of small specimens  
for you and among them are a  
lot of very young bottle fish and  
others I do not know. Rec'd  
postal from Atkinson, he is  
at 275 Windsor Ave, Cape May  
for the summer. He said Dr  
Stone was not so good as his  
heart is in bad shape.

over

Sincerely yours

R. Dale Benson

P.S. 3 Marlin I heard have  
been taken off Beach I have  
this season.

Drumstick

It is

It is

It is



3153

Analysis of species

- a. Harpadon. Scales present only on posterior part of body.
- b. Pectoral less than head.
- c. Pectoral  $1\frac{1}{3}$  in head. translucens.
- c.<sup>2</sup> Pectoral  $2\frac{1}{4}$  to  $3\frac{1}{4}$  in head. microchir.
- b.<sup>2</sup> Pectoral equal or greater than head with age. neherens.
- a.<sup>2</sup> Peltaharpadon new subgenus. Body more or less covered with scales, also part of head, though anteriorly most deciduous. squamosus.

Subgenus Harpadon Le Sueur



Harpodon translucens Kent

Harpodon translucens Kent, Proc. Royal

Soc. Queensland, vol. 6, no. 5, 1889, pp. 222,

234, pl. 13, fig. 2. Ard River, Cambridge

Gulf, north Australia.

Depth 7; head  $4\frac{1}{4}$  ( $4\frac{1}{2}$  description).

Snout  $8\frac{3}{4}$  in head from snout tip;

eye 9,  $1\frac{1}{8}$  in snout; premaxillary

extends  $5\frac{1}{2}$  eye diameters behind

eye, length  $5\frac{4}{5}$  in head from

snout tip; teeth slender, recurved,

uneven, minutely uncinuate, lower

longest; some at mandibular

symphysis on outer surface project forward.

Scales minute, cycloid, only on hind part of body.

D. I, 15 (14 in description), second ray  $1\frac{1}{8}$  in total head length; adipose fin  $2\frac{3}{4}$ ; A. 13 (15 in description), first ray  $2\frac{4}{5}$ ; caudal 1, widely forked (with central hind lobe behind in description); least depth of caudal peduncle  $4\frac{1}{4}$ ; pectoral  $1\frac{1}{3}$ ; ventral  $1 + \frac{1}{8}$ , rays 9.

Transparent, with minute black

speckling along dorsal surface.  
Iris peacock blue. Length 125 mm,  
(Kent.)

North Australia.



3157

Harpodon microchir Günther

Harpodon microchir Günther, Ann. Mag.  
Nat. Hist., series 5, vol. 1, 1878, p. 487.

Off Tokyo, Japan; Rep. Voy. Challenger,  
vol. 1, pt. 6, 1880, p. 71 (types); vol. 22, 1887,

p. 180 (types). — Jordan and Herre, Proc.

U. S. Nat. Mus., vol. 32, 1907, p. 522, fig. 2  
(entrance Tokyo Bay).

(— Goode and Bean, Oceanic Ichth., 1896,  
p. 59 (reference)).

Depth  $7\frac{1}{3}$  to  $9\frac{3}{4}$ ; head 5 to  $5\frac{1}{3}$ ,  
width  $2\frac{7}{8}$  to 3. Snout  $5\frac{1}{5}$  to 6 in head  
from snout tip; eye 9 to  $10\frac{3}{4}$ ,  $1\frac{1}{2}$  to  
 $2\frac{1}{2}$  in snout,  $2\frac{2}{3}$  to  $3\frac{1}{3}$  in interorbital;  
premaxillary extends  $4\frac{2}{5}$  to 5 eye

diameters behind eye, length  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in head from snout tip; interorbital 4 to  $4\frac{2}{3}$ , low, depressed or very slightly convex. Gill rakers  $5 + 10$  short clusters of 4 to 6 very small spinules; gill filaments equal eye.

Scales 58 to 60 in lateral line to ends of central caudal rays. Scales small on posterior part of body, extend forward on belly to ventral but not to dorsal above lateral line. Scales with 17 to 25 circuli, complete.

D. II, 11, I or II, 12, I, first branched ray  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in total head length; adipose fin  $2\frac{1}{4}$  to  $2\frac{1}{2}$ ; A. I, 14, I, first branched ray  $1\frac{4}{5}$  to  $2\frac{1}{5}$ ; caudal  $1\frac{1}{5}$  to  $1\frac{1}{4}$ , emarginate, lobes rounded; least depth of caudal peduncle  $3\frac{3}{4}$  to 5; pectoral  $2\frac{1}{4}$  to  $3\frac{1}{4}$ ; ventral  $1\frac{1}{4}$  to  $1\frac{1}{3}$ .

Brown above, paler laterally. Under surface of head and body brownish white. Iris silvery gray. Sides of head pale. Dorsal and caudal dark brown like back. Pectoral pale dusky. Anal and



ventral whitish.

Japan

62399 U.S.N.M. Tokyo, Japan.

D.S. Jordan and J.D. Snyder.

Length 290 to 363 mm. 4 examples.

10213. D. 5565. Lammi Island (N.), S.  $69^{\circ}$  W., 6 miles (N.  $5^{\circ}51'42''$  E.  $120^{\circ}30'30''$ ), between Jolo and Tawi Tawi. In 243 fathoms. September 21, 1909. Length 217 mm. to end of broken tail.

10190, 10291. D. 5566. Lammi Island (N.), S.  $67^{\circ}$  W., 6.8 miles (N.  $5^{\circ}52'12''$  E.  $120^{\circ}31'$ ), between Jolo and Tawi Tawi. In 244 fathoms. September 21, 1909. Length 317 to 325 mm.

10141. D. 5567. Lammi Island (N.), N.  $81^{\circ}$  W., 9 miles (N.  $5^{\circ}48'$  E.  $120^{\circ}33'45''$ ), north of Tawi Tawi. In 268 fathoms. September 21, 1909. Length 344 mm.

10210, 10212. D. 5549. Jolo Light  
(Jolo), N.  $80^{\circ}$  E., 15.8 miles (N.  $6^{\circ} 1'$   
 $15''$  E.  $120^{\circ} 44' 20''$ ), Jolo Island  
and vicinity. In 263 fathoms.  
September 17, 1909. Length 293 to  
305 mm.

6518 to 6521. D. 5282. Malabatuan  
Island (N.), S.  $84^{\circ}$  W., 6.20 miles (N.  
 $13^{\circ} 53'$  E.  $120^{\circ} 26' 45''$ ), China Sea  
vicinity southern Luzon. In 248  
fathoms. July 18, 1908. Length 255  
to 388 mm.

6603 to 6605. D. 5290. Matocot Point,  
S.  $50^{\circ}$  E., 3.10 miles (N.  $13^{\circ} 40' 9''$  E.  $120^{\circ}$   
 $59' 30''$ ), China Sea, vicinity southern  
Luzon. In 214 fathoms. July 22, 1908.  
Length 400 to 487 mm.

6674 to 6676. D. 5296. Matocot  
Point, S.  $63^{\circ}$  E., 4.50 miles (N.  $13^{\circ} 40' 9''$   
E.  $120^{\circ} 57' 45''$ ), China Sea, vicinity  
southern Luzon. In 210 fathoms.  
July 24, 1908. Length 374 to 470 mm.



6677. D. 5297. Inatocot Point,  
S.  $50^{\circ}$  E., 5.10 miles (N.  $13^{\circ} 41' 20''$  E.  
 $120^{\circ} 58'$ ), China Sea, vicinity  
southern Luzon. In 198 fathoms.  
July 24, 1908. Length 345 mm.

8044. D. 5373. Tayabas Light  
(outer), N.  $20^{\circ}$  E., 15 miles (N.  $13^{\circ}$   
 $40'$  E.  $121^{\circ} 31' 10''$ ), Marinduque  
Island and vicinity. In 338  
fathoms. March 25, 1909. Length  
315 mm.



Harpodon nehereus (Buchanan Hamilton)

Asmerus nehereus Buchanan Hamilton, Fishes of Ganges, 1822, pp. 207, 308. Mouths of Ganges.

Xaurus nehereus Cantor, Journ. Asiatic Soc.

Bengal, vol. 18, pt. 2, 1849, p. 1253 (Pinang).

Harpodon nehereus Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 401. (China, Chusan, Malay<sup>Peninsula, Ganges</sup>). —

Bleeker, Atlas Ichth. Ind. Néerland., vol. 6, pl. (2) 278, fig. 2

1875, p. 157<sub>1</sub> (Java, Madura, Sumatra, Pinang, Singapore, Banka, Borneo). —

Steindachner, Vitz. Ber. Akad. Wiss. Wien,

Math.-naturw. Klasse, vol. 102, pt. 1, 1873, p.

(Swatow). — Steindachner, Cat. Fauna Filipinas, vol. 1,

— Fowler, Journ. Acad. Nat. Sci. Philadelphia, series 2, vol. 12, 1904, p. 501 (Palang).  
1895, p. 572 (Luzon, Manila, Navotas). — Weber

and Beaufort, Fishes Indo Austral. Archipelago,

vol. 2, 1913, p. 151, fig. 57 (Bagan Upi Upi,  
Balitapapun). — Mori, Journ. Pan Pacific  
Research Inst., vol. 3, no. 3, July - Sept. 1925,  
p. 4 (Korea).

Harpadon nehereus Fowler, Proc. Acad. Nat.  
Sci. Philadelphia, 1911, p. 569 (Padang example).

Salmo (Harpadon) microps Le Sueur, Journ.  
Acad. Nat. Sci. Philadelphia, vol. 5, 1825, p.

48, pl. 3.

Harpadon microps Swainson, Nat. Hist. Animals, vol. 2, 1839, p. 288 (reference).  
Triurus microcephalus Swainson, Nat. Hist.

Animals, Fishes, vol. 2, 1839, p. 288 (on Wanamotta  
Russell, Fishes of Coromandel, vol. 2, 1803, p. 55, pl. 171, Vizagapatam).

Saurus ophiodon Valenciennes, Hist. Nat. Poiss.,  
vol. 22, 1849, p. 490.

Saurichthys ophiodon Bleeker, Act. Soc. Sci.

Ind. Néerland., no. 9, vol. 3, 1857-58, p. 3 (Padang);

no. 7, vol. 5, 1858-59, p. 2 (Sinkawang, Borneo).  
Harpodon ophiodon Bleeker, Natuurk.

"Tijdschr. Nederl. Indië", vol. 21, 1860, p.  
 139 (Muntok, Benka); vol. 22, 1860, p. 65  
 (Benculen); Act. Soc. Sci. Ind. Néerland., vol.  
 8 (Sumatra 1), 1860, p. 2 (Benculen).

Depth 6; head  $4\frac{1}{4}$ , width  $2\frac{1}{2}$ . Snout  
 6 in head from snout tip; eye 13, premaxillary  
 extends 5 eye diameters behind eye,  
 length  $1\frac{1}{2}$  in head from snout tip;  
 interorbital 4, evenly convex. Gill rakers  
 firmly erect slender conic small  
 numerous uniserial teeth, at intervals  
 of 3 or 4 enlarged tooth, all shorter  
 than gill filaments, which twice



eye diameter.

Scales in lateral line  $4\frac{1}{2}$  to caudal base and 7 more on latter, outer over middle point of caudal; 5 above to adipose fin origin, 4 below to last anal ray base. Body naked anteriorly, except lateral line. Caudal base largely scaly.

D. II, 9, I, second simple ray  $1\frac{3}{4}$  in total head length; A. III, 12, I, second simple ray  $1\frac{3}{4}$ ; caudal  $1\frac{1}{4}$ ; least depth of caudal peduncle  $4\frac{1}{2}$ ; pectoral ; ventral .

Livid pale brown, trunk largely  
neutral gray, abdomen more  
whitish. Fins paler than trunk,  
uniform. Dorsal and caudal slightly  
dusky. Iris silvery.

A.N.S.P.

1 example, Padang, Sumatra.  
1904. A. C. Harrison and H. M. Miller.  
Length 206 mm.

Peltaharpadon new subgenus

Type Harpodon squamosus Alcock

Body more or less covered with scales, also part of head, though anteriorly most deciduous.

Harpodon sp. Alcock.



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Harpadon squamosus Alecock

Harpodon squamosus Alecock, Ann.

Mag. Nat. Hist., ser. 6, vol. 8, 1891, p.

127. N.  $15^{\circ}56'$  E.  $81^{\circ}30\frac{1}{2}'$ , 240 to 276

fathoms, Bay of Bengal; series 6, vol.

10, 1892, p. 356 (Bay of Bengal, 200 to

300 fathoms). — Goode and Bean,

Oceanic Ichth., 1895, p. 154 (reference).

— Alecock, Journ. Asiatic Soc. Bengal,

vol. 65, pt. 2, 1896, p. 332 (reference);

Cat. Deep Sea Fishes Indian Mus.,

1899, p. 154 (Bay of Bengal, 240 to 281

fathoms); Illustrat. Zool. Investigator,

pt. 7, 1900, pl. 30, fig. 1. — Boulenger,  
Ann. Mag. Nat. Hist., ser. 7, vol. 7,  
1901, p. 261 (N.  $25^{\circ}24'$  E.  $57^{\circ}27'$ , 230 to  
243 fathoms).

Depth  $5\frac{3}{4}$ ; head  $3\frac{3}{4}$ . Snout  $10\frac{2}{3}$   
in head from snout tip; eye  $1\frac{1}{5}$ ,  
slightly greater than snout, equals  
interorbital; premaxillary extends  
3 eye diameters behind eye, length  
 $1\frac{4}{5}$  in head from snout tip;  
interorbital flat.

Scales 44 in lateral line to caudal  
base and 5 more out over middle of

caudal; 5 above, 5 below. Scales deciduous, less so on hind half of tail.

D. II, 11, first branched ray  $1\frac{3}{4}$  in total head; adipose fin  $3\frac{2}{5}$ ; A. II, 13, first branched ray  $1\frac{1}{3}$ ; caudal  $1\frac{1}{6}$ , deeply forked, median lobe not extended; least depth of caudal peduncle 4; pectoral  $1\frac{3}{4}$ ; ventral  $1\frac{1}{8}$ .

Hyaline gray. Inside mouth and gill opening slightly pigmented. Peritoneum black. Paired fins and caudal black, male 190 to 217 mm.,



female 230 to 267 mm. (Alcock,  
Bay of Bengal.

Genus Bathysaurus Günther 3173

Bathysaurus Günther, Ann. Mag. Nat. Hist.,  
series 5, vol. 2, 1878, p. 182. Type Bathysaurus

ferox Günther, designated by Jordan,

Genera of Fishes, pt. 3, 1919, p. 395.

Body elongate, subcylindrical.  
Head depressed. Snout produced,  
flat above. Eye moderate or small,  
lateral, little advanced. Mouth  
cleft rather wide, lower jaw  
projecting. Premaxillary very long,  
styliform, tapering, not movable.  
Teeth in wide bands in jaws,  
not covered by lips, curved,  
unequal in size and barbed at  
ends. Series of similar teeth on  
each palatine, few on tongue  
and groups of small ones on

hyoid. Gill openings wide,  
membranes separate from each other  
and from isthmus. Gill rakers  
tubercular. Pseudobranchiae well  
developed. Branchiostegals 11 or 12.  
Scales small. Lateral line axial,  
complete. Dorsal premedian, rays 18.  
Adipose fin present or absent. Anal  
postmedian, moderate. Caudal  
emarginate. Pectoral moderately large.  
Ventral inserted close behind pectoral,  
rays 8.



Analysis of species

a<sup>1</sup>. No adipose fin; branched dorsal rays 16. ferox.

a<sup>2</sup>. Adipose fin present; branched dorsal rays 8 to 10. mollis.

Bathysaurus ferox Günther

Bathysaurus ferox Günther, Ann. Mag. Nat.

Hist., series 5, vol. 2, 1878, p. 182, East

<sup>1100 fathoms</sup>  
New Zealand coast; Rep. Voy. Challenger,

vol. 22, 1887, p. 181, pl. 46, fig. A (type). —

Goode and Bean, Oceanic Ichth., 1895, pp.

<sup>510,</sup>  
58, pl. 18, figs. 65-66 (Gulf Stream,

984 to 1106 fathoms). — Jordan and Evermann,

Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896,

p. 539 (compiled). — <sup>Murray and</sup> Hjort, The Depths

of the Ocean, 1912, p. 396 (l.  $27^{\circ}$  to  $34^{\circ}$

W.  $8^{\circ}$  to  $33^{\circ}$ , 2055 to 2685 meters).

Bathysaurus agassizii Goode and Bean,

Bull. Mus. Comp. Zool., vol. 10, 1882, p.

215. N.  $33^{\circ} 35' 20''$  W.  $76^{\circ} 6' 47''$  fathoms,

Gulf Stream. — Vaillant, Expéd.  
Sci. Travailleur et Talisman, Poiss.,  
1888, p. 139, pl. 10, figs. 1, a-b (off  
Morocco, 2200 meters).

Bathysaurus obtusirostris Vaillant,  
Expéd. Sci. Travailleur et Talisman,  
Poiss., 1888, p. 136, pl. 10, figs. 2, a-g,  
pl. 16, fig. 3. Off Cape Verde Islands,  
3655 meters.

Depth  $5\frac{1}{2}$  to 7; head  $3\frac{1}{4}$  to 4,  
width 2 to  $2\frac{2}{5}$ . Snout  $2\frac{7}{8}$  to 3 in  
head from snout tip; eye  $5\frac{3}{5}$  to 9,  
 $1\frac{3}{4}$  to 3 in snout, 1 to  $1\frac{3}{4}$  in interorbital.



premaxillary extends 1 to 2 eye diameters behind eye, length  $1\frac{1}{2}$  to  $1\frac{3}{5}$  in head from snout tip; interorbital  $5\frac{1}{5}$  to  $5\frac{1}{3}$ , largely level, with deep median depression. Gill rakers as row of numerous fine short denticles, greatly less than gill filaments, which equal eye.

Scales 66 to 68 in lateral line to caudal base and 5 more on latter; 10 above, 9 below,  $3\frac{1}{2}$  predorsal forward to occiput. Scales all very caducous, most all fallen. Scales simple, thin, with 14 circuli basally, though only 5 or 6 extended continuously apically.

D. III, 16, I, first branched ray

Bathysaurus obtusirostris Guillant,  
Expéd. Sci. Travailleur et Talisman,  
Pois., 1888, p. 136, pl. 10, figs. 2, a-g, pl.  
16, fig. 3. Off Cape Verde Islands, 3655  
meters.

$1\frac{2}{3}$  to  $1\frac{3}{4}$  in total head length;  
 A. III, 9, I or III, 10, I, first branched  
 ray  $2\frac{1}{2}$  to  $2\frac{7}{8}$ ; caudal  $1\frac{4}{5}$  to  $1\frac{2}{3}$ ,  
 little emarginate; least depth of  
 caudal peduncle 5 to  $5\frac{2}{3}$ ; pectoral  
 $1\frac{1}{8}$  to  $1\frac{1}{3}$ , rays 15; ventral  $1\frac{7}{8}$  to 2  
 in total head length, rays 8.

Brown. Iris grayish. Inside  
 branchiostegal flap bluish black.  
 Fins all brownish, paired ones  
 darker brown basally.

Atlantic and Pacific Oceans.



Bathysaurus agassizii Goode and Bean  
Bathysaurus agassizii Goode and Bean,  
Bull. Mus. Comp. Zool., vol. 10, 1882, p.  
215. N.  $33^{\circ}35'20''$  W.  $76^{\circ}$ , 647 fathoms,  
Gulf Stream. — Vaillant, Exped. Travailleur<sup>l</sup>  
et Talisman, Poiss., 1888, p. 139, pl. 10,  
figs. 1, a - b (off Morocco, 2200 meters).

38106 U.S.N.M.

In 984 fathoms. Albatross Station 2710.

Length 780 mm.

43744 U.S.N.M. N.  $39^{\circ}$  W.  $70^{\circ}$

Albatross Station

Length 220 mm.

Bathysaurus mollis Günther

Bathysaurus mollis Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 182. Middle of South Pacific; off Yeddo; in 1875 to 2385 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 183, pl. 46, figs. B-B' (type). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 66 (copied).

— Goode and Bean, Oceanic Ichth., 1895, p. 59 (reference). — Vaillant, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130 (N. 39° 56' W. 17° 58', 4360 meters, east of Azores). —

Townsend and Nichols, Bull. Amer. Mus. Nat. Hist. New York, vol. 52, art. 1, May 16, 1925, p. 10, pl. 1 fig. 1 (off west coast southern Lower California, Lat. 23°, 1760 fathoms).



Depth  $8\frac{1}{4}$  to  $8\frac{2}{3}$ ; head  $3\frac{1}{8}$  to 4, width  $2\frac{1}{8}$ . Snout  $3\frac{4}{5}$  to  $4\frac{3}{5}$  in head from snout tip; eye  $5\frac{4}{5}$  to  $6\frac{1}{4}$ ,  $1\frac{1}{4}$  in snout,  $1\frac{1}{8}$  to  $1\frac{1}{4}$  in interorbital; premaxillary reaches  $1\frac{2}{3}$  to  $1\frac{4}{5}$  eye diameters behind eye, length  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in head from snout tip; interorbital  $4\frac{3}{4}$ , low.

Scales enlarged 40 to 50 in lateral line to caudal base and 2 more on latter; 10 above, 7 below, 8 rows on opercle.

D. III, 12, I, first branched ray  $1\frac{1}{6}$

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to  $1\frac{1}{3}$  in total head, little less than first simple ray; adipose fin  $5\frac{2}{3}$  to  $5\frac{7}{8}$ ; A. III, 8, I or II, 10, I, first branched ray  $1\frac{4}{5}$  to  $1\frac{5}{6}$ ; caudal 1, in young  $1 + \frac{1}{7}$ , emarginate; least depth of caudal peduncle  $4\frac{2}{3}$  to  $5\frac{1}{10}$ ; pectoral  $1\frac{1}{6}$ ; ventral  $1\frac{1}{8}$  to  $1\frac{1}{3}$ .

Whitish, Inside mouth, gill opening and lower parts of body black. Young with 14 narrow vertical bars, extending whole body depth; shorter bar in interspaces not extending upwards above lateral line. Length 191 to 484 mm. (Günther.)

Pacific Ocean. Günther calls attention to the coloration of the young as pattern extremely rare in deep sea fishes.

Genus Bathylaco Goode and Bean  
Bathylaco Goode and Bean, Oceanic  
Ichth., 1895, p. 57. Type Bathylaco  
nigricans Goode and Bean, monotypic.

Body elongate, subcylindrical.  
 Head large, conic. Snout short.  
 Eye large, greatly advanced. Maxillary  
 very long, expanded. Mouth very  
 large, oblique, wide, lower jaw  
 projecting. Teeth small, somewhat  
 biserial in front above and uniserial  
 behind; narrow band in mandible.  
 Palatine teeth also in narrow bands.  
 Opercular bones thin, weak. Gill  
 opening very wide, left membranes  
 overlapping right and not attached  
 to isthmus. Gill rakers few, short.  
 Scales apparently absent. Dorsal origin  
 postmedian, first twice longer than  
 anal. No adipose fin? Caudal forked.  
 Pectoral small, low. Ventral  
 moderate, inserted nearly opposite  
 dorsal origin, rays 8.



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Bathylaco nigricans (Goode and Bean)  
Bathylaco nigricans (Goode and Bean,  
Oceanic Ichth., 1895, p. 57, pl. 18,  
fig. 69. Blake Station XXXIX, off Santa  
Cruz, 2393 fathoms. — Jordan and Evermann,  
Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p.  
540 (copied).

Depth  $6\frac{3}{5}$ ; head  $3\frac{3}{4}$ . Snout  $7\frac{1}{4}$   
in head from snout tip; eye  $4\frac{1}{4}$ ,  
greater than snout; premaxillary  
extends  $1\frac{2}{3}$  eye diameters behind eye,  
expansion  $1\frac{3}{4}$  in eye, length  $1\frac{2}{5}$  in  
head from snout tip; interorbital  
 $4\frac{1}{3}$ , low.

D. 20, height 2? in total head

length; A. 11, height  $3\frac{1}{4}$ ?; inserted  
last third of dorsal base; caudal  
forked?; least depth of caudal  
peduncle  $3\frac{1}{5}$ ; pectoral 5?; ventral  
damaged.

Black. Length 213 mm.

(Goode and Bean.)

Atlantic Ocean.